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UNITED STATES DEPARTMENT OF COMMERCE
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WEATHER BUREAU — F. W. Reichelderfer, *Chief*

MONTHLY WEATHER REVIEW

APRIL 1948

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Contour lines and isotherms based on radiosonde observations at 0300 G. C. T. Winds indicated by black arrows based on photo theodolite observations, those indicated by red arrows based on rawins taken at 0300 G. C. T.

MONTHLY WEATHER REVIEW

Editor, James E. Caskey, Jr.

VOL. 76, No. 4
W. B. No. 1519

APRIL 1948

CLOSED JUNE 5, 1948
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METEOROLOGICAL AND CLIMATOLOGICAL DATA FOR APRIL 1948

AEROLOGICAL OBSERVATIONS

[For description of change in Table 1 and charts, see REVIEW, January 1946, p. 6]

TABLE 1.—*Mean dynamic height (geopotential) in units of 0.98 dynamic meters, temperature in degrees centigrade, and relative humidity in percent, for standard pressures, as obtained by radiosondes during April 1948*

STATIONS AND MEAN SURFACE PRESSURES

Standard pressure surface (mb.)	Albany, N. Y. (1,008.0 mb.)				Albuquerque, N. Mex. (835.4 mb.)				Apalachicola, Fla. (1,018.2 mb.)				Atlanta, Ga. (984.2 mb.)				Auburn, Calif. (957.2 mb.)				Big Spring, Tex. (924.6 mb.)				Bismarck, N. Dak. (952.9 mb.)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
Surface	30	86	7.3	69	30	1,620	16.1	24	30	5	21.1	83	30	300	17.8	68	29	501	10.3	76	30	774	21.0	29	30	505	6.3	71
1,000	30	151	(*)	----	30	57	(*)	----	30	162	21.1	76	30	163	(*)	----	29	134	(*)	----	30	88	(*)	----	30	105	(*)	----
950	30	578	5.7	63	30	516	(*)	----	30	605	19.1	69	30	605	17.7	62	29	565	10.7	73	30	539	(*)	----	30	533	(*)	----
900	30	1,013	3.3	62	30	985	(*)	----	30	1,068	16.0	67	30	1,063	14.9	63	29	1,012	7.7	72	30	1,007	21.1	29	30	972	4.9	61
850	30	1,474	1.3	60	30	1,472	(*)	----	30	1,552	12.7	68	30	1,545	11.8	68	29	1,481	4.5	72	30	1,498	17.9	29	30	1,437	3.0	60
800	30	1,960	−.8	63	30	1,986	14.7	24	30	2,059	10.0	59	30	2,049	8.5	64	29	1,972	1.2	72	30	2,014	14.8	29	30	1,926	.7	56
750	30	2,481	−3.1	62	30	2,532	10.4	27	30	2,594	7.4	48	30	2,585	5.6	56	29	2,492	−2.0	69	30	2,558	10.7	32	30	2,447	−2.4	58
700	30	3,018	−5.8	58	30	3,097	5.7	33	30	3,157	4.6	43	30	3,142	2.8	43	29	3,033	−5.4	66	30	3,126	6.6	33	30	2,985	−5.8	59
650	30	3,603	−8.7	59	30	3,702	.6	39	30	3,760	1.0	35	30	3,741	−.4	----	29	3,614	−9.0	58	30	3,733	2.3	32	30	3,569	−9.4	66
600	30	4,212	−12.0	56	30	4,334	−4.6	47	30	4,396	−2.9	----	29	4,373	−4.0	----	29	4,227	−12.5	53	30	4,371	−2.5	36	30	4,176	−13.2	52
550	30	4,876	−15.9	59	30	5,013	−9.9	52	30	5,077	−7.5	----	29	5,054	−8.4	----	29	4,888	−16.5	53	30	5,054	−7.6	40	30	4,836	−17.7	53
500	29	5,580	−20.9	----	30	5,740	−15.5	53	30	5,815	−12.6	----	29	5,786	−13.3	----	29	5,596	−21.4	----	29	5,789	−12.9	39	29	5,540	−22.9	----
450	29	6,357	−25.8	----	30	6,533	−20.7	----	30	6,615	−18.2	----	29	6,587	−19.0	----	29	6,371	−26.5	----	29	6,589	−18.4	43	29	6,311	−28.4	----
400	29	7,195	−31.5	----	30	7,388	−26.7	----	30	7,478	−24.6	----	29	7,445	−25.6	----	28	7,207	−32.3	----	28	7,451	−25.0	----	29	7,138	−34.7	----
350	28	8,119	−38.7	----	30	8,336	−34.0	----	30	8,435	−32.1	----	29	8,398	−33.0	----	28	8,136	−39.0	----	28	8,407	−32.2	----	29	8,057	−41.2	----
300	28	9,160	−46.0	----	30	9,397	−42.1	----	30	9,504	−40.5	----	28	9,466	−41.4	----	27	9,170	−46.8	----	28	9,476	−40.1	----	29	9,088	−47.9	----
250	26	10,339	−53.3	----	30	10,605	−51.0	----	30	10,719	−50.2	----	28	10,678	−51.2	----	25	10,348	−53.9	----	28	10,696	−49.4	----	25	10,271	−53.9	----
200	22	11,759	−57.2	----	30	12,027	−58.7	----	30	12,143	−58.9	----	28	12,095	−60.1	----	23	11,757	−56.7	----	23	12,116	−57.9	----	23	11,703	−55.0	----
175	21	12,598	−56.8	----	29	12,867	−58.6	----	29	12,976	−60.8	----	28	12,928	−60.1	----	18	12,600	−55.4	----	17	12,949	−58.4	----	22	12,554	−53.4	----
150	13	13,534	−52.2	----	28	13,836	−58.9	----	28	13,930	−62.4	----	28	13,888	−60.5	----	16	13,578	−57.7	----	11	13,898	−57.3	----	21	13,541	−52.8	----
125	8	14,735	−53.6	----	24	14,977	−59.8	----	25	15,051	−65.6	----	27	15,019	−62.4	----	14	14,717	−57.4	----	9	15,027	−60.0	----	20	14,728	−53.5	----
100	----	----	----	----	16	16,358	−62.5	----	19	16,381	−69.1	----	19	16,384	−65.3	----	10	16,123	−58.5	----	9	16,407	−62.7	----	18	16,155	−55.3	----
80	----	----	----	----	7	17,728	−63.8	----	11	17,700	−67.9	----	12	17,732	−65.8	----	----	----	----	----	----	----	----	----	16	17,572	−57.1	----
60	----	----	----	----	----	----	----	----	8	19,436	−65.1	----	7	19,473	−63.1	----	----	----	----	----	----	----	----	----	7	19,440	−59.7	----

Standard pressure surface (mb.)	Boise, Idaho (912.2 mb.)				Brownsville, Tex. (1,013.3 mb.)				Buffalo, N. Y. (991.4 mb.)				Caribou, Maine (993.9 mb.)				Charleston, S. C. (1,018.3 mb.)				Ciudad Victoria, Mexico (971.1 mb.)				Columbia, Mo. (987.1 mb.)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
Surface	30	868	9.6	56	30	6	22.2	82	30	221	8.1	71	30	191	0.6	74	30	13	16.9	85	30	335	28.4	42	30	239	14.7	88
1,000	30	96	(*)	----	30	121	21.5	81	30	148	(*)	----	30	142	(*)	----	30	168	17.7	77	30	72	(*)	----	30	120	(*)	----
950	30	530	(*)	----	30	568	20.0	68	30	574	7.6	65	30	557	.0	60	30	611	16.5	66	30	529	26.5	44	30	567	14.6	52
900	30	980	10.0	50	30	1,031	19.1	47	30	1,016	5.4	60	30	985	−2.0	64	30	1,065	14.0	65	30	1,003	22.2	48	30	1,018	11.8	54
850	30	1,452	6.7	51	30	1,521	17.3	37	30	1,481	2.8	62	30	1,437	−4.4	67	30	1,546	11.4	57	30	1,496	18.1	54	30	1,494	9.6	55
800	30	1,947	2.7	57	30	2,036	14.8	32	30	1,970	.3	67	30	1,913	−6.2	64	30	2,050	8.6	53	30	2,012	14.3	58	30	1,995	7.1	52
750	30	2,470	−1.6	65	30	2,581	12.4	23	30	2,491	−2.6	68	30	2,422	−8.2	63	30	2,585	5.8	47	30	2,562	11.3	54	30	2,530	4.0	53
700	30	3,010	−6.0	69	30	3,153	9.1	22	30	3,030	−5.2	64	30	2,950	−10.3	62	30	3,143	2.5	45	30	3,129	8.8	42	30	3,081	.8	52
650	30	3,589	−10.2	69	30	3,762	5.0	----	30	3,616	−7.8	62	30	3,522	−12.9	58	30	3,741	−.9	41	30	3,741	4.8	38	30	3,674	−3.0	51
600	30	4,198	−14.6	70	30	4,410	.6	----	30	4,228	−10.9	58	30	4,125	−16.1	56	30	4,374	−4.4	38	29	4,385	.6	35	30	4,302	−7.4	52
550	30	4,851	−19.0	71	30	5,097	−4.6	----	30	4,898	−14.8	55	30	4,776	−19.9	54	30	5,052	−8.7	38	26	5,080	−4.2	----	30	4,977	−11.6	46
500	30	5,553	−24.0	----	30	5,843	−10.2	----	30	5,607	−19.4	53	30	5,475	−24.7	----	29	5,792	−13.7	----	26	5,823	−9.6	----	30	5,698	−16.6	45
450	30	6,314	−29.8	----	30	6,649	−16.4	----	30	6,389	−24.9	----	30	6,238	−29.8	----	29	6,589	−19.4	----	26	6,639	−15.3	----	29	6,497	−21.6	----
400	29	7,142	−35.7	----	30	7,520	−23.1	----	30	7,229	−30.9	----	30	7,064	−35.4	----	29	7,450	−25.9	----	26	7,509	−21.9	----	29	7,349	−27.9	----
350	29	8,057	−42.0	----	30	8,483	−30.5	----	30	8,162	−37.9	----	30	7,982	−41.3	----	29	8,403	−33.0	----	26	8,477	−29.4	----	28	8,294	−35.2	----
300	28	9,087	−48.6	----	30	9,558	−39.3	----	29	9,218	−45.3	----	30	9,015	−47.1	----	29	9,469	−41.3	----	26	9,559	−38.0	----	27	9,353	−42.9	----
250	27	10,268	−54.6	----	29	10,780	−49.0	----	27	10,422	−53.6	----	30	10,206	−52.0	----	29	10,681	−51.1	----	25	10,791	−47.3	----	27	10,556	−51.9	----
200	23	11,693	−55.3	----	29	12,217	−56.5	----	25	11,850	−59.0	----	29	11,634	−53.1	----	29	12,101	−60.0	----	----	----	----	----	23	11,973	−60.6	----
175	19	12,527	−53.0	----	28	13,055	−59.7	----	21	12,678	−57.6	----	25	12,483	−51.4	----	29	12,932	−60.7	----	----	----	----	----	20	12,799	−61.4	----
150	15	13,502	−51.0	----	26	14,014	−62.8	----	9	13,637	−56.5	----	21	13,488	−50.7	----	27	13,890	−61.3	----	----	----	----	----	16	13,759	−58.9	----
125	13	14,694	−53.3	----	18	15,144	−67.4	----	----	----	----	----	14	14,665	−51.4	----	25	15,023	−62.4	----	----	----	----	----	14	14,896	−59.3	----
100	11	16,109	−54.8	----	9	16,505	−71.6	----	----	----	----	----	6	16,133	−52.6	----	18	16,367	−64.7	----	----	----	----	----	12	16,296	−62.7	----
80	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	13	17,723	−65.7	----	----	----	----	----	7	17,685	−62.9	----
60	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	6	19,484	−64.6	----	----	----	----	----	----	----	----	----

See footnotes at end of table.

TABLE 1.—*Mean dynamic height (geopotential) in units of 0.98 dynamic meters, temperature in degrees centigrade, and relative humidity in percent, for standard pressures, as obtained by radiosondes during April 1948*—Continued

Standard pressure surface (mb.)	Dodge City, Kans. (922.6 mb.)				El Paso, Tex. (879.6 mb.)				Ely, Nev. (805.3 mb.)				Fort Worth, Tex. (989.3 mb.)				Glasgow, Mont. (935.4 mb.)				Grand Junction, Colo. (849.2 mb.)				Great Falls, Mont. (881.9 mb.)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
Surface	28	792	14.5	42	30	1,195	21.4	15	30	1,908	7.5	45	30	211	22.2	48	30	648	7.1	61	30	1,474	11.6	40	30	1,128	6.1	54
1,000	28	95	(*)	----	30	65	(*)	----	30	81	(*)	----	30	117	(*)	----	30	91	(*)	----	30	80	(*)	----	30	81	(*)	----
950	28	540	(*)	----	30	526	(*)	----	30	524	(*)	----	30	566	21.0	46	30	519	(*)	----	30	527	(*)	----	30	516	(*)	----
900	28	998	15.8	37	30	1,003	(*)	----	30	981	(*)	----	30	1,028	18.0	50	30	964	6.9	54	30	989	(*)	----	30	965	(*)	----
850	28	1,480	13.2	37	30	1,491	20.9	17	30	1,457	(*)	----	30	1,515	14.7	51	30	1,432	4.3	53	30	1,466	(*)	----	30	1,430	5.4	49
800	28	1,987	10.0	37	30	2,010	16.5	18	30	1,963	(*)	----	30	2,025	11.8	46	30	1,923	1.3	56	30	1,973	10.0	36	30	1,922	2.0	51
750	28	2,521	6.7	36	30	2,553	11.7	20	30	2,495	4.1	42	30	2,568	8.8	38	30	2,443	−2.3	59	30	2,506	5.6	40	30	2,441	−2.1	57
700	28	3,083	2.6	36	30	3,125	6.6	25	30	3,047	−.7	49	30	3,130	5.4	36	30	2,983	−6.2	62	30	3,064	.8	47	30	2,983	−6.5	64
650	28	3,677	−1.8	36	30	3,727	1.6	27	30	3,638	−5.8	55	29	3,739	1.3	32	30	3,561	−10.4	58	30	3,652	−4.2	55	30	3,562	−10.9	68
600	28	4,308	−6.2	39	30	4,366	−3.2	31	30	4,256	−10.9	60	29	4,371	−3.1	32	30	4,169	−14.6	57	30	4,279	−9.2	61	30	4,168	−15.5	69
550	28	4,982	−11.1	40	30	5,049	−8.0	33	30	4,921	−15.8	63	29	5,055	−7.9	32	30	4,822	−19.2	57	30	4,945	−14.0	64	30	4,818	−20.5	67
500	28	5,707	−16.1	40	30	5,781	−13.6	35	30	5,630	−20.9	----	29	5,787	−13.2	----	30	5,524	−24.2	----	30	5,663	−19.2	68	30	5,516	−25.6	----
450	28	6,498	−21.7	----	29	6,579	−19.4	----	30	6,407	−25.8	----	29	6,587	−19.2	----	30	6,287	−29.9	----	30	6,445	−24.5	----	29	6,267	−31.7	----
400	28	7,349	−28.1	----	28	7,443	−26.1	----	30	7,244	−31.4	----	29	7,447	−25.8	----	29	7,118	−36.0	----	30	7,286	−30.8	----	29	7,088	−37.7	----
350	28	8,293	−35.4	----	28	8,394	−33.4	----	30	8,176	−37.7	----	29	8,399	−33.3	----	29	8,032	−42.7	----	29	8,221	−37.4	----	29	7,995	−44.6	----
300	28	9,346	−43.9	----	27	9,456	−42.0	----	29	9,218	−45.8	----	29	9,461	−41.7	----	29	9,055	−49.9	----	29	9,267	−45.4	----	28	9,007	−50.9	----
250	27	10,551	−52.9	----	27	10,663	−52.1	----	27	10,405	−54.1	----	29	10,672	−50.9	----	27	10,236	−54.9	----	29	10,462	−53.1	----	27	10,177	−54.8	----
200	23	11,964	−60.5	----	26	12,074	−60.1	----	24	11,822	−58.3	----	28	12,090	−60.0	----	22	11,656	−54.8	----	29	11,879	−58.1	----	24	11,588	−54.0	----
175	15	12,768	−58.1	----	23	12,906	−60.4	----	23	12,667	−57.5	----	28	12,919	−60.9	----	16	12,507	−52.1	----	28	12,714	−57.2	----	22	12,444	−52.8	----
150	10	13,708	−56.2	----	21	13,858	−62.0	----	22	13,643	−57.1	----	28	13,877	−61.4	----	14	13,509	−51.6	----	25	13,689	−56.1	----	19	13,423	−51.8	----
125	9	14,837	−57.4	----	18	14,989	−64.5	----	20	14,790	−58.6	----	21	14,985	−62.7	----	11	14,693	−52.7	----	21	14,835	−56.5	----	15	14,589	−53.2	----
100	5	16,199	−60.9	----	12	16,323	−67.7	----	13	16,183	−60.8	----	14	16,354	−64.5	----	11	16,129	−54.7	----	14	16,243	−58.0	----	11	16,013	−54.5	----
80	----	----	----	----	7	17,676	−68.7	----	8	17,612	−61.3	----	10	17,718	−66.7	----	7	17,564	−56.3	----	6	17,563	−59.3	----	8	17,477	−55.0	----

Standard pressure surface (mb.)	Greensboro, N. C. (987.7 mb.)				Hatteras, N. C. (1,019.8 mb.)				Havana, Cuba [1] (....mb.)				Honolulu, T. H. (1,014.2 mb.)				Huntington, W. Va. (997.9 mb.)				International Falls, Minn. (973.8 mb.)				Joliet, Ill. (995.6 mb.)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
Surface	30	273	14.5	72	30	3	15.8	81	----	----	----	----	30	3	24.7	67	30	172	13.4	71	30	360	3.0	75	30	178	10.2	72
1,000	30	167	(*)	----	30	169	15.4	77	----	----	----	----	30	126	22.9	69	30	153	(*)	----	30	149	(*)	----	30	140	(*)	----
950	30	602	14.4	64	30	609	13.8	72	----	----	----	----	30	575	19.3	74	30	591	13.5	62	30	561	4.4	66	30	572	10.1	64
900	30	1,058	12.1	65	30	1,058	11.6	65	----	----	----	----	30	1,034	15.9	78	30	1,040	10.8	64	30	999	2.2	67	30	1,016	7.6	64
850	30	1,534	9.1	65	30	1,535	9.3	56	----	----	----	----	30	1,518	12.9	76	30	1,514	8.1	63	30	1,459	.3	63	30	1,485	5.6	57
800	30	2,034	6.4	57	30	2,035	7.0	51	----	----	----	----	30	2,026	11.1	57	30	2,013	5.3	63	30	1,942	−2.2	64	30	1,980	3.6	52
750	30	2,565	3.6	56	30	2,570	4.7	43	----	----	----	----	30	2,572	9.2	38	30	2,543	2.1	61	30	2,458	−4.6	63	30	2,505	.9	51
700	30	3,119	.6	55	30	3,123	1.6	44	----	----	----	----	30	3,133	7.1	32	30	3,091	−1.1	58	30	2,993	−7.7	61	30	3,053	−1.9	54
650	30	3,709	−3.0	52	28	3,718	−1.9	46	----	----	----	----	30	3,742	4.3	30	30	3,681	−4.6	53	30	3,570	−10.9	55	30	3,641	−5.6	52
600	30	4,339	−6.7	48	28	4,348	−6.0	47	----	----	----	----	30	4,387	.7	----	30	4,304	−8.3	50	30	4,177	−14.3	51	30	4,262	−9.6	47
550	29	5,016	−10.7	43	28	5,027	−10.3	44	----	----	----	----	30	5,078	−3.6	----	30	4,977	−12.4	49	30	4,835	−18.5	49	30	4,930	−14.0	47
500	29	5,744	−15.5	46	28	5,752	−15.2	42	----	----	----	----	30	5,827	−8.7	----	30	5,695	−17.5	52	30	5,536	−23.3	----	30	5,645	−18.9	----
450	29	6,534	−21.5	----	28	6,546	−20.6	----	----	----	----	----	30	6,641	−14.4	----	30	6,484	−22.8	----	30	6,305	−28.7	----	30	6,431	−24.5	----
400	29	7,386	−27.8	----	27	7,400	−26.5	----	----	----	----	----	30	7,517	−21.2	----	30	7,331	−28.8	----	29	7,127	−34.8	----	30	7,269	−30.5	----
350	29	8,331	−35.0	----	27	8,349	−33.9	----	----	----	----	----	30	8,487	−28.5	----	30	8,272	−36.1	----	29	8,046	−41.2	----	30	8,205	−37.1	----
300	27	9,391	−42.8	----	24	9,401	−42.3	----	----	----	----	----	30	9,573	−36.7	----	30	9,325	−44.2	----	29	9,079	−47.6	----	30	9,253	−44.8	----
250	26	10,600	−51.9	----	22	10,614	−50.8	----	----	----	----	----	30	10,811	−45.6	----	28	10,538	−52.8	----	28	10,257	−53.3	----	26	10,444	−52.8	----
200	24	12,010	−60.7	----	17	12,036	−58.0	----	----	----	----	----	30	12,268	−54.6	----	23	11,951	−60.2	----	25	11,682	−53.3	----	23	11,853	−58.2	----
175	22	12,836	−60.9	----	12	12,877	−58.8	----	----	----	----	----	28	13,117	−59.4	----	18	12,769	−60.3	----	25	12,544	−52.2	----	20	12,677	−58.2	----
150	21	13,795	−60.1	----	7	13,833	−59.1	----	----	----	----	----	28	14,070	−64.2	----	15	13,714	−58.5	----	22	13,537	−52.6	----	17	13,645	−56.8	----
125	19	14,921	−60.2	----	----	----	----	----	----	----	----	----	28	15,177	−67.2	----	10	14,887	−59.9	----	18	14,711	−52.9	----	13	14,790	−56.4	----
100	12	16,300	−63.2	----	----	----	----	----	----	----	----	----	27	16,512	−70.2	----	----	----	----	----	11	16,161	−53.8	----	7	16,197	−57.6	----
80	6	17,672	−63.5	----	----	----	----	----	----	----	----	----	25	17,836	−68.9	----	----	----	----	----	7	17,576	−55.1	----	----	----	----	----
60	----	----	----	----	----	----	----	----	----	----	----	----	19	19,581	−64.3	----	----	----	----	----	----	----	----	----	----	----	----	----
50	----	----	----	----	----	----	----	----	----	----	----	----	16	20,703	−60.8	----	----	----	----	----	----	----	----	----	----	----	----	----
40	----	----	----	----	----	----	----	----	----	----	----	----	12	22,112	−57.2	----	----	----	----	----	----	----	----	----	----	----	----	----

Standard pressure surface (mb.)	Lake Charles, La. (1,016.3 mb.)				Lander, Wyo. (825.3 mb.)				Las Vegas, Nev. (944.3 mb.)				Little Rock, Ark. (1,006.9 mb.)				Mazatlan, Mexico (1,008.3 mb.)				Medford, Oreg. (966.6 mb.)				Merida, Mexico (1,010.9 mb.)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
Surface	29	5	19.9	84	30	1,696	6.4	46	30	574	20.2	22	30	79	18.2	68	30	14	24.7	75	30	401	8.7	71	30	27	27.4	66
1,000	29	145	20.9	77	30	83	(*)	----	30	74	(*)	----	30	137	18.9	63	30	86	24.0	70	30	118	(*)	----	30	123	26.5	67
950	29	591	18.6	70	30	522	(*)	----	30	524	(*)	----	30	581	18.1	56	30	542	24.5	41	30	548	8.3	68	30	576	23.3	67
900	29	1,051	15.7	65	30	979	(*)	----	30	987	18.3	----	30	1,039	15.0	57	30	1,008	23.0	35	30	989	5.0	71	30	1,046	20.7	62
850	29	1,535	13.7	53	30	1,451	(*)	----	30	1,472	14.2	----	30	1,521	12.0	56	30	1,504	20.4	34	30	1,452	1.4	76	30	1,538	17.7	63
800	29	2,044	11.5	41	30	1,952	6.4	39	30	1,979	9.9	28	30	2,026	9.2	55	30	2,025	17.2	33	30	1,937	−2.3	81	30	2,054	14.3	66
750	29	2,587	8.7	36	30	2,482	2.1	42	30	2,513	5.5	33	30	2,565	6.4	48	30	2,574	13.6	32	30	2,451	−5.9	83	30	2,599	10.8	61
700	29	3,148	6.3	----	30	3,030	−2.5	48	30	3,070	1.0	35	30	3,121	3.4	48	30	3,148	9.8	26	30	2,984	−9.3	77	30	3,168	7.4	47
650	28	3,755	2.6	----	30	3,616	−7.1	53	30	3,664	−3.4	37	30	3,718	−.3	46	30	3,760	5.3	28	30	3,558	−12.6	64	29	3,776	4.0	34
600	28	4,393	−1.6	----	30	4,232	−11.9	52	30	4,289	−8.0	40	30	4,354	−4.2	45	30	4,407	.3	34	29	4,162	−16.2	57	29	4,422	.4	----
550	28	5,080	−6.5	----	30	4,894	−16.8	52	30	4,960	−12.3	41	30	5,032	−8.7	42	30	5,098	−5.0	38	29	4,812	−20.4	56	29	5,112	−4.0	----
500	28	5,817	−11.9	----	30	5,600	−22.0	----	30	5,682	−17.0	44	30	5,766	−13.8	----	30	5,842	−10.2	37	29	5,511	−25.3	----	29	5,858	−8.8	----
450	28	6,622	−18.2	----	30	6,373	−27.7	----	30	6,469	−22.6	----	30	6,562	−19.2	----	30	6,652	−15.7	----	28	6,275	−30.4	----	29	6,671	−14.5	----
400	28	7,483	−24.7	----	30	7,203	−33.7	----	30	7,318	−29.1	----	30	7,424	−25.6	----	30	7,525	−22.0	----	28	7,100	−36.1	----	29	7,549	−21.1	----
350	28	8,441	−31.9	----	30	8,126	−40.3	----	29	8,253	−36.0	----	30	8,377	−32.8	----	30	8,494	−29.9	----	28	8,015	−42.0	----	29	8,520	−28.4	----
300	28	9,511	−40.5	----	30	9,161	−47.8	----	28	9,302	−44.4	----	30	9,444	−41.1	----	30	9,572	−38.6	----	28	9,044	−48.0	----	29	9,606	−36.6	----
250	28	10,726	−50.7	----	30	10,344	−54.4	----	27	10,501	−53.5	----	30	10,658	−50.4	----	27	10,801	−47.8	----	28	10,230	−53.3	----	28	10,847	−45.6	----
200	28	12,146	−60.3	----	29	11,758	−56.2	----	25	11,904	−59.4	----	29	12,082	−59.8	----	23	12,243	−56.6	----	28	11,658	−55.0	----	28	12,301	−55.5	----
175	28	12,975	−61.9	----	27	12,606	−55.6	----	22	12,723	−58.2	----	27	12,910	−61.9	----	15	13,109	−60.4	----	28	12,511	−54.1	----	26	13,143	−60.6	----
150	26	13,931	−63.0	----	24	13,571	−55.3	----	18	13,688	−57.3	----	24	13,861	−60.8	----	8	14,076	−63.4	----	28	13,500	−54.2	----	19	14,085	−66.0	----
125	25	15,045	−66.2	----	27	14,706	−56.6	----	15	14,835	−59.2	----	19	14,983	−60.9	----	6	15,202	−68.6	----	27	14,666	−55.1	----	6	15,183	−70.6	----
100	20	16,383	−68.9	----	15	16,099	−57.0	----	9	16,185	−61.2	----	14	16,344	−63.3	----	----	----	----	----	20	16,083	−56.8	----	----	----	----	----
80	12	17,722	−69.3	----	11	17,522	−58.9	----	7	17,544	−61.8	----	7	17,719	−64.8	----	----	----	----	----	12	17,512	−58.1	----	----	----	----	----

See footnotes at end of table.

TABLE 1.—*Mean dynamic height (geopotential) in units of 0.98 dynamic meters, temperature in degrees centigrade, and relative humidity in percent, for standard pressures, as obtained by radiosondes during April 1948*—Continued

Standard pressure surface (mb.)	Oklahoma City, Okla. (968.1 mb.)				Omaha, Nebr. (977.1 mb.)				Phoenix, Ariz. (972.0 mb.)				Pittsburgh, Pa. (973.3 mb.)				Portland, Maine (1,015.8 mb.)				Rapid City, S. Dak. (899.0 mb.)				St. Cloud, Minn. (976.2 mb.)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
Surface	30	391	17.9	54	30	308	14.6	58	30	339	22.4	25	30	382	10.9	68	30	20	4.0	74	30	980	7.9	66	30	317	7.6	69
1,000	30	110	(*)	----	30	111	(*)	----	30	89	(*)	----	30	153	(*)	----	30	149	5.1	68	30	83	(*)	----	30	117	(*)	----
950	30	554	18.9	49	30	547	13.6	54	30	543	24.0	21	30	587	10.0	67	30	570	4.8	61	30	520	(*)	----	30	545	7.8	61
900	30	1,014	16.3	51	30	999	11.3	55	30	1,007	20.2	21	30	1,031	8.0	65	30	1,005	2.7	64	30	973	(*)	----	30	985	5.7	58
850	30	1,499	13.7	50	30	1,474	8.5	54	30	1,496	16.0	24	30	1,501	5.1	66	30	1,465	.2	63	30	1,444	8.8	50	30	1,451	3.4	60
800	30	2,007	10.8	49	30	1,972	5.3	55	30	2,007	11.6	28	30	1,994	2.7	65	30	1,949	−2.1	63	30	1,943	5.4	53	30	1,941	.9	58
750	30	2,546	7.7	45	30	2,502	2.0	49	30	2,548	7.4	30	30	2,521	.1	63	30	2,464	−4.5	61	30	2,469	1.9	55	30	2,462	−1.6	56
700	30	3,107	3.9	41	30	3,050	−1.6	51	30	3,106	3.1	33	30	3,064	−3.0	56	30	3,000	−7.0	59	30	3,019	−2.1	58	30	3,004	−4.7	56
650	30	3,708	.1	35	30	3,643	−5.4	52	30	3,705	−.7	29	29	3,654	−6.0	51	30	3,578	−9.9	58	30	3,605	−6.4	61	30	3,585	−8.2	52
600	30	4,343	−4.2	34	30	4,260	−9.4	50	30	4,337	−4.8	----	29	4,272	−9.6	51	30	4,189	−13.5	54	30	4,224	−11.1	63	30	4,200	−12.5	49
550	29	5,022	−8.9	41	30	4,931	−13.9	47	30	5,018	−9.6	----	29	4,944	−13.7	48	29	4,843	−17.6	56	30	4,889	−15.8	60	30	4,862	−16.6	51
500	29	5,752	−14.3	41	30	5,646	−18.5	46	30	5,744	−14.9	----	29	5,658	−18.3	----	29	5,551	−22.1	----	30	5,597	−20.8	----	30	5,569	−21.5	----
450	28	6,548	−20.1	42	30	6,433	−23.9	----	30	6,543	−20.6	----	28	6,448	−24.0	----	28	6,319	−27.3	----	30	6,373	−26.4	----	30	6,343	−26.5	----
400	28	7,403	−26.8	----	30	7,273	−30.0	----	30	7,394	−27.1	----	28	7,290	−30.2	----	28	7,152	−33.3	----	30	7,208	−32.6	----	30	7,179	−32.3	----
350	28	8,351	−34.2	----	29	8,207	−37.1	----	29	8,340	−34.6	----	28	8,227	−37.1	----	28	8,077	−40.0	----	30	8,134	−39.4	----	29	8,110	−39.0	----
300	28	9,412	−42.1	----	29	9,254	−45.3	----	29	9,399	−43.0	----	28	9,274	−45.2	----	28	9,113	−46.7	----	30	9,173	−46.7	----	29	9,150	−46.2	----
250	25	10,631	−50.8	----	28	10,449	−53.9	----	29	10,603	−52.2	----	28	10,468	−53.6	----	28	10,306	−52.7	----	29	10,362	−53.0	----	28	10,345	−52.6	----
200	18	12,080	−60.4	----	27	11,861	−59.6	----	27	12,016	−59.4	----	27	11,876	−59.2	----	27	11,729	−55.4	----	29	11,788	−55.8	----	19	11,742	−54.4	----
175	11	12,909	−61.3	----	27	12,697	−58.9	----	26	12,850	−59.9	----	24	12,702	−59.0	----	25	12,562	−55.4	----	29	12,640	−54.6	----	15	12,597	−53.6	----
150	9	13,870	−59.6	----	26	13,673	−56.9	----	25	13,813	−59.7	----	20	13,666	−58.0	----	20	13,530	−53.9	----	23	13,595	−53.2	----	12	13,569	−51.5	----
125	8	15,012	−61.1	----	22	14,814	−58.8	----	23	14,949	−61.2	----	11	14,760	−56.8	----	17	14,684	−55.2	----	19	14,779	−54.4	----	12	14,750	−52.8	----
100	7	16,378	−63.2	----	16	16,215	−60.5	----	17	16,336	−63.6	----	8	16,152	−59.3	----	12	16,086	−55.5	----	9	16,173	−56.2	----	10	16,149	−53.7	----
80	5	17,734	−64.2	----	7	17,608	−60.9	----	11	17,699	−65.3	----	6	17,548	−59.3	----	----	----	----	----	6	17,561	−57.6	----	10	17,576	−55.2	----
60	----	----	----	----	5	19,394	−60.3	----	5	19,437	−63.4	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----

Standard pressure surface (mb.)	Miami, Fla. (1,017.6 mb.)				Nantucket, Mass. (1,017.9 mb.)				Nashville, Tenn. (996.9 mb.)				New Orleans, La. (1,017.7 mb.)				North Platte, Nebr. (913.4 mb.)				Oakland, Calif (1,016.7 mb.)				Ogden, Utah (861.6 mb.)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
Surface	30	4	22.9	78	29	14	5.3	80	30	180	17.4	64	29	2	20.3	81	30	849	12.7	49	30	6	12.3	73	30	1,355	9.1	54
1,000	30	156	22.3	76	29	159	6.3	73	30	152	(*)	—	29	153	20.8	77	30	75	(*)	—	30	144	11.0	74	30	99	(*)	----
950	30	605	19.3	78	29	585	6.2	63	30	593	15.8	62	29	598	18.5	70	30	521	(*)	—	30	576	8.4	76	30	537	(*)	----
900	30	1,065	16.4	78	29	1,022	3.9	59	30	1,048	13.1	63	29	1,059	15.8	64	30	973	13.7	46	30	1,016	6.4	74	30	991	(*)	----
850	30	1,550	13.5	74	29	1,485	2.1	59	30	1,527	10.3	60	29	1,542	13.2	55	30	1,453	11.2	42	30	1,483	4.3	62	30	1,467	9.4	47
800	30	2,059	11.3	58	29	1,972	.2	57	30	2,029	7.3	59	29	2,050	10.7	46	30	1,955	7.6	43	30	1,975	1.8	53	30	1,967	5.9	47
750	30	2,602	9.2	48	29	2,491	−2.0	55	30	2,565	4.6	52	29	2,592	8.3	34	30	2,486	3.8	46	30	2,503	−1.1	45	30	2,494	1.6	52
700	30	3,165	6.0	40	29	3,033	−4.5	48	30	3,118	1.5	46	29	3,153	5.8	----	30	3,040	−.3	49	30	3,040	−4.0	42	30	3,043	−2.9	58
650	30	3,772	2.5	40	29	3,617	−7.6	50	30	3,712	−2.0	45	29	3,758	2.3	----	30	3,631	−5.0	52	30	3,629	−7.3	----	30	3,626	−7.6	62
600	30	4,411	−1.3	36	29	4,233	−11.1	49	30	4,343	−5.7	41	29	4,397	−1.8	----	29	4,250	−9.9	54	30	4,241	−11.0	----	30	4,242	−12.5	69
550	30	5,099	−5.9	33	29	4,897	−14.8	46	30	5,018	−9.8	----	29	5,081	−6.5	----	29	4,918	−14.8	59	30	4,911	−14.9	----	30	4,901	−17.2	65
500	30	5,840	−10.8	----	29	5,610	−19.7	50	30	5,750	−14.5	----	29	5,821	−11.9	----	29	5,630	−19.9	55	29	5,621	−19.2	----	30	5,609	−22.2	----
450	30	6,648	−16.4	----	29	6,391	−24.7	----	30	6,547	−20.4	----	28	6,628	−17.8	----	29	6,411	−25.2	----	29	6,403	−24.4	----	30	6,382	−27.6	----
400	30	7,518	−22.9	----	28	7,228	−30.9	----	30	7,401	−26.7	----	27	7,497	−24.3	----	29	7,249	−31.2	----	29	7,246	−30.2	----	30	7,213	−33.0	----
350	30	8,482	−30.2	----	28	8,161	−37.2	----	28	8,349	−33.6	----	27	8,455	−31.7	----	28	8,186	−37.9	----	29	8,182	−37.4	----	30	8,140	−39.5	----
300	30	9,560	−38.2	----	28	9,211	−44.4	----	28	9,412	−41.7	----	26	9,529	−39.9	----	28	9,231	−45.6	----	29	9,229	−45.0	----	30	9,178	−46.9	----
250	29	10,783	−47.6	----	22	10,397	−51.6	----	26	10,623	−51.0	----	25	10,749	−49.9	----	28	10,422	−54.2	----	29	10,426	−52.9	----	28	10,370	−53.9	----
200	27	12,226	−56.2	----	17	11,837	−56.2	----	24	12,042	−59.6	----	25	12,176	−58.8	----	27	11,828	−59.7	----	29	11,844	−58.4	----	24	11,766	−57.4	----
175	27	13,068	−59.0	----	13	12,688	−56.4	----	24	12,874	−60.4	----	24	13,006	−60.8	----	27	12,666	−57.8	----	29	12,684	−57.3	----	22	12,615	−56.3	----
150	21	14,034	−62.4	----	9	13,664	−54.5	----	19	13,846	−58.6	----	23	13,963	−61.6	----	26	13,640	−57.0	----	28	13,667	−56.1	----	17	13,586	−54.1	----
125	18	15,151	−66.4	----	8	14,824	−56.6	----	14	14,986	−60.0	----	22	15,081	−64.1	----	21	14,791	−57.7	----	25	14,818	−56.7	----	12	14,713	−55.5	----
100	----	----	----	----	7	16,240	−57.9	----	8	16,348	−63.0	----	16	16,421	−67.4	----	16	16,172	−60.6	----	20	16,209	−58.1	----	9	16,144	−57.3	----
80	----	----	----	----	----	----	----	----	----	----	----	----	10	17,753	−67.6	----	12	17,554	−61.5	----	11	17,622	−60.0	----	----	----	----	----
60	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	7	19,319	−62.5	----	----	----	----	----	----	----	----	----

	San Antonio, Tex. (985.8 mb.)				San Juan, P. R. (1,014.7 mb.)				Santa Maria, Calif. (1,009.3 mb.)				Sault Ste. Marie, Mich. (990.1 mb.)				Spokane, Wash. (927.1 mb.)				Swan Island, W. I. (1,013.6 mb.)				Tacubaya, Mexico (774.0 mb.)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
Surface	30	240	22.3	60	30	15	24.3	76	30	71	12.2	78	30	221	3.6	78	30	721	7.0	68	30	10	25.6	79	29	2,306	17.6	44
1,000	30	114	(*)	----	30	143	23.1	77	30	149	11.5	78	30	138	(*)	----	30	93	(*)	----	30	129	24.8	79	29	47	(*)	----
950	30	565	20.9	59	30	590	19.3	81	30	581	10.2	76	30	562	4.2	65	30	522	(*)	----	30	582	21.1	82	29	513	(*)	----
900	30	1,027	18.3	56	30	1,052	16.0	79	30	1,026	8.8	68	30	995	3.3	60	30	964	5.5	65	30	1,046	18.3	76	29	994	(*)	----
850	30	1,515	15.8	51	30	1,537	13.1	77	30	1,498	7.0	63	30	1,457	1.6	59	30	1,429	2.0	67	30	1,534	15.5	72	29	1,490	(*)	----
800	30	2,027	13.6	40	30	2,045	10.7	70	30	1,994	4.6	54	30	1,944	−.8	63	30	1,914	−1.9	73	30	2,047	12.7	64	29	2,021	(*)	----
750	30	2,573	10.9	32	30	2,588	9.4	47	30	2,522	1.9	45	30	2,465	−3.5	66	30	2,427	−5.5	74	30	2,596	10.1	52	29	2,576	15.6	43
700	30	3,140	7.7	30	30	3,152	7.3	34	30	3,071	−1.2	44	30	3,000	−6.1	65	30	2,962	−9.2	76	30	3,157	7.2	45	29	3,154	10.6	48
650	30	3,747	4.1	32	30	3,760	4.3	29	29	3,665	−4.2	----	30	3,583	−9.1	60	30	3,536	−13.2	73	30	3,769	4.1	37	29	3,767	5.4	54
600	29	4,392	−.7	33	30	4,405	.6	26	28	4,288	−8.0	----	30	4,193	−13.0	61	30	4,135	−17.5	70	30	4,411	.8	30	29	4,405	.1	63
550	29	5,079	−5.8	33	30	5,101	−3.3	26	28	4,962	−12.0	----	30	4,855	−17.2	57	30	4,783	−21.9	----	30	5,108	−3.1	----	29	5,106	−5.3	69
500	28	5,819	−11.4	35	30	5,846	−7.9	----	27	5,681	−16.4	----	29	5,556	−22.0	----	30	5,476	−26.8	----	30	5,853	−7.8	----	29	5,848	−10.4	60
450	28	6,626	−17.5	----	29	6,667	−13.3	----	27	6,477	−21.8	----	29	6,332	−27.2	----	30	6,234	−32.3	----	30	6,679	−13.1	----	29	6,661	−15.4	53
400	28	7,490	−24.2	----	29	7,543	−19.7	----	27	7,322	−27.8	----	29	7,164	−32.6	----	30	7,048	−38.6	----	29	7,554	−18.9	----	29	7,534	−21.1	----
350	28	8,449	−31.4	----	29	8,520	−26.6	----	27	8,267	−34.8	----	29	8,091	−38.9	----	30	7,952	−45.1	----	29	8,535	−25.8	----	26	8,502	−28.6	----
300	27	9,526	−39.3	----	29	9,615	−34.3	----	27	9,325	−42.9	----	29	9,133	−45.8	----	30	8,968	−50.7	----	29	9,533	−34.0	----	25	9,586	−37.3	----
250	26	10,744	−49.0	----	29	10,869	−43.4	----	25	10,535	−52.3	----	27	10,326	−52.5	----	29	10,151	−54.7	----	29	10,884	−43.7	----	22	10,824	−46.3	----
200	26	12,178	−57.8	----	29	12,334	−54.4	----	17	11,945	−60.1	----	21	11,757	−55.6	----	27	11,590	−53.9	----	29	12,348	−54.7	----	----	----	----	----
175	23	13,018	−59.3	----	27	13,174	−60.5	----	15	12,771	−60.8	----	18	12,614	−55.4	----	25	12,454	−52.8	----	28	13,189	−60.9	----	----	----	----	----
150	18	13,990	−61.3	----	23	14,120	−66.9	----	15	13,731	−59.4	----	18	13,597	−55.0	----	23	13,449	−52.4	----	26	14,139	−66.8	----	----	----	----	----
125	12	15,099	−63.6	----	12	15,198	−72.7	----	12	14,873	−59.5	----	14	14,766	−53.5	----	22	14,626	−53.2	----	11	15,255	−72.8	----	----	----	----	----
100	8	16,445	−66.8	----	----	----	----	----	8	16,268	−62.5	----	----	----	----	----	17	16,039	−53.9	----	10	16,556	−77.2	----	----	----	----	----
80	----	----	----	----	----	----	----	----	5	17,639	−63.0	----	----	----	----	----	15	17,462	−55.1	----	----	----	----	----	----	----	----	----
60	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	9	19,293	−55.9	----	----	----	----	----	----	----	----	----
50	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	8	20,444	−55.6	----	----	----	----	----	----	----	----	----

See footnotes at end of table.

TABLE 1.—*Mean dynamic height (geopotential) in units of 0.98 dynamic meters, temperature in degrees centigrade, and relative humidity in percent, for standard pressures, as obtained by radiosondes during April 1948*—Continued

Standard pressure surface (mb.)	Tampa, Fla. (1,017.8 mb.)				Tatoosh Island, Wash. (1,008.8 mb.)				Toledo, Ohio (994.5 mb.)				Washington, D. C. (1,017.4 mb.)			
	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity	Number of observations	Dynamic height	Temperature	Relative humidity
Surface	29	9	21.7	79	30	31	6.8	81	30	191	10.0	72	30	25	12.7	66
1,000	29	162	21.2	78	30	103	6.2	80	30	144	(*)	----	30	169	12.2	62
950	29	605	18.5	77	30	525	3.3	79	30	573	9.3	65	30	603	10.8	59
900	29	1,067	15.4	76	30	959	.5	78	30	1,017	6.9	64	30	1,014	9.0	60
850	29	1,550	12.4	75	30	1,415	−2.1	76	30	1,486	4.8	62	30	1,520	7.0	58
800	29	2,057	10.0	63	30	1,894	−5.1	75	30	1,978	2.4	60	30	2,017	4.9	57
750	29	2,597	7.9	44	30	2,403	−8.1	68	30	2,504	.2	50	30	2,548	2.1	58
700	29	3,158	4.8	38	30	2,932	−11.3	61	30	3,048	−2.6	51	30	3,095	−1.0	60
650	29	3,758	1.0	31	30	3,501	−14.9	54	30	3,637	−6.1	53	30	3,685	−4.7	57
600	29	4,397	−2.8	----	30	4,097	−18.8	49	30	4,256	−9.8	51	30	4,309	−7.8	50
550	29	5,080	−7.2	----	30	4,742	−23.4	----	30	4,925	−14.2	54	30	4,982	−12.0	47
500	29	5,818	−12.1	----	30	5,431	−28.1	----	30	5,640	−18.8	56	30	5,703	−16.8	42
450	29	6,620	−17.7	----	30	6,186	−33.0	----	30	6,424	−24.3	----	30	6,489	−22.2	----
400	29	7,486	−24.5	----	30	6,999	−38.6	----	30	7,267	−30.2	----	30	7,340	−28.6	----
350	29	8,444	−31.7	----	30	7,905	−44.0	----	30	8,203	−37.4	----	30	8,282	−35.9	----
300	28	9,512	−40.0	----	30	8,927	−48.9	----	28	9,249	−45.2	----	30	9,333	−44.3	----
250	26	10,734	−49.5	----	30	10,113	−52.2	----	28	10,444	−53.3	----	29	10,529	−53.2	----
200	26	12,164	−58.1	----	29	11,563	−51.8	----	24	11,870	−59.3	----	29	11,940	−59.9	----
175	26	12,999	−60.4	----	29	12,430	−50.8	----	22	12,699	−59.6	----	29	12,772	−59.8	----
150	26	13,953	−62.6	----	27	13,430	−50.9	----	18	13,663	−58.4	----	25	13,733	−58.4	----
125	26	15,066	−66.3	----	23	14,616	−51.1	----	13	14,802	−59.0	----	22	14,873	−59.9	----
100	19	16,402	−69.5	----	23	16,061	−52.4	----	7	16,143	−60.3	----	18	16,256	−61.4	----
80	14	17,730	−70.9	----	16	17,489	−52.8	----	----	----	----	----	10	17,646	−61.8	----
60	----	----	----	----	8	19,352	−52.6	----	----	----	----	----	5	19,432	−60.6	----

[1] Data not yet received.

(*) Temperature and relative humidity data for this level are not available or are available only for certain days. See note entitled "Change in Summarization of Radiosonde Data," p. 6, in the January 1946 issue of the MONTHLY WEATHER REVIEW.

NOTE.—All observations scheduled between 0300 and 0500, G. C. T., except at Ciudad Victoria, Mazatlan, and Merida, where they are taken near 0200, G. C. T. "Number of observations" refers to those of dynamic height only. (In a few cases temperature or humidity data may be missing for one or more standard pressure surfaces of some observations.) Relative humidity data are not published for standard pressure surfaces having a corresponding mean temperature below −20° C.

All relative humidity observations are obtained by electric hygrometer and have been adjusted to compensate for the values occurring below the operating range of the humidity element. For explanation of the adjustment see article entitled "Curve Method for Obtaining Monthly Means of Relative Humidity," p. 241, MONTHLY WEATHER REVIEW, December 1944.

None of the means included in these tables are based on less than 15 observations at the surface or 5 observations at a standard pressure level.

TABLE 2.—*Free-air resultant winds based on pilot balloon observations made near 2200 G. C. T., during April 1948. Directions given in degrees from north (N=360°, E=90°, S=180°, W=270°). Speeds in meters per second*

Altitude (meters) m. s. l.	Abilene, Tex. (534 m.)			Albuquerque, N. Mex. (1,627 m.)			Atlanta, Ga. (299 m.)			Billings, Mont. (1,095 m.)			Bismarck, N. Dak. (512 m.)			Boise, Idaho (868 m.)			Brownsville, Tex. (7 m.)			Buffalo, N. Y. (220 m.)			Burlington, Vt. (100 m.)			Charleston, S. C. (16 m.)			Cincinnati, Ohio (273 m.)			Denver, Colo. (1,618 m.)			El Paso, Tex. (1,198 m.)		
	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed
Surface	30	182	5.1	30	242	4.0	29	203	0.6	30	338	0.6	29	68	1.5	30	107	1.3	30	128	5.7	29	266	2.2	28	283	2.3	29	157	1.5	30	246	2.2	28	225	2.7	30	260	5.5
500							29	236	.7										30	135	6.2	29	258	3.7	28	276	2.9	29	163	2.0	30	252	3.1								
1,000	30	182	5.7				29	240	1.6				28	144	.9	30	131	1.6	28	153	5.2	29	241	5.2	28	280	3.4	26	237	1.6	26	246	4.5								
1,500	29	186	6.1				29	251	2.2	30	283	1.3	27	248	1.9	30	190	2.4	26	158	2.7	24	256	7.5	22	282	6.3	25	279	2.6	22	248	5.4				30	251	6.2
2,000	28	195	5.6	30	246	6.2	26	275	2.8	29	252	3.5	24	240	4.4	30	218	4.8	26	145	1.7	24	268	9.3	20	291	9.0	24	275	3.0	18	251	8.2	28	238	3.3	30	245	6.2
2,500	28	214	6.3	30	242	6.2	22	303	4.9	29	252	5.7	23	246	6.4	30	227	6.6	25	164	1.0	19	281	9.6	18	292	11.6	21	281	4.4	17	270	9.6	28	247	4.1	30	250	7.1
3,000	28	234	7.4	30	243	6.6	21	310	6.6	23	249	8.2	22	255	8.3	27	230	8.2	23	254	1.1	15	284	13.1	18	298	14.6	21	282	4.7	15	281	10.5	28	244	5.2	30	253	7.6
4,000	27	250	10.7	29	254	10.5	19	304	8.9	15	244	8.9	22	258	12.6	16	240	11.1	21	286	3.4				13	307	16.1	20	297	7.4	13	292	12.7	27	254	8.6	29	255	10.4
5,000	25	261	12.4	25	255	15.3	19	299	11.1	13	247	11.2	18	261	13.8	10	239	13.0	21	306	5.7							19	298	11.5				22	256	13.0	28	258	14.5
6,000	23	268	14.8	24	257	18.7	18	299	11.6				14	266	18.0				21	291	6.7							19	301	11.7				18	261	17.5	26	258	16.6
8,000	19	269	15.9	20	257	23.5	16	302	13.0										20	276	10.5							13	290	11.7				13	262	25.6	23	258	19.2
10,000	11	274	24.0	14	264	26.7	12	300	13.3										18	281	14.3							12	290	15.9							19	269	24.4
12,000				11	261	32.1													16	271	18.4																13	269	31.3
14,000																			15	276	24.1																		

Altitude (meters) m. s. l.	Ely, Nev. (1,910 m.)			Grand Junction, Colo. (1,475 m.)			Greensboro, N. C. (271 m.)			Havre, Mont. (767 m.)			Jacksonville, Fla. (16 m.)			Joliet, Ill. (178 m.)			Las Vegas, Nev. (575 m.)			Little Rock, Ark. (88 m.)			Medford, Oreg. (416 m.)			Miami, Fla. (12 m.)			Mobile, Ala. (66 m.)			Nashville, Tenn. (194 m.)			New York, N. Y. (15 m.)		
	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed
Surface	29	231	3.2	30	251	3.2	28	250	1.7	30	285	2.0	29	81	3.8	30	216	2.3	30	214	4.2	29	176	1.8	30	210	0.4	30	89	3.6	29	154	1.7	30	244	1.3	27	249	1.4
500							28	240	2.8				29	84	3.0	30	220	3.2				29	186	3.2	30	199	.7	30	84	5.9	29	174	1.8	30	238	2.6	27	278	2.7
1,000							28	249	3.4	30	278	2.7	26	122	.9	30	226	4.7	30	209	6.0	28	194	4.1	29	212	2.5	29	78	4.1	26	167	1.3	29	238	5.0	26	296	5.0
1,500				30	254	3.5	27	263	3.5	29	256	3.2	24	214	1.4	25	239	8.4	30	204	6.7	28	206	4.6	27	218	4.9	26	58	2.9	22	16	.7	27	241	4.8	26	304	7.1
2,000	29	198	4.7	30	243	4.6	25	286	5.8	26	255	6.6	22	258	2.9	21	248	10.6	29	212	7.6	27	227	4.9	24	218	6.9	25	47	2.3	19	356	2.4	25	261	5.4	21	307	10.0
2,500	29	216	5.7	29	234	5.5	23	298	7.5	23	260	8.2	20	277	4.1	16	266	11.6	29	227	7.2	25	254	5.6	16	212	9.0	20	43	2.8	17	353	3.7	21	279	5.4	17	208	9.8
3,000	29	219	5.6	27	231	7.4	23	295	8.8	20	253	8.9	18	288	6.5	13	272	11.5	29	246	7.6	25	258	7.2	13	213	10.1	18	359	3.8	17	335	4.1	21	276	7.0	14	312	10.1
4,000	23	228	8.1	25	230	9.7	21	288	10.3	16	251	11.7	15	273	7.4				27	253	11.6	22	280	9.0	13	224	11.2	15	340	4.7	14	310	4.9	18	280	8.9	10	315	11.8
5,000	18	253	11.8	23	244	14.3	20	292	13.5	13	245	12.8	11	269	7.2				24	247	14.6	20	285	12.4	12	232	13.7	12	332	6.2	12	286	4.1	14	293	13.7						
6,000	11	265	16.2	19	250	21.0	16	300	12.9	10	247	17.0	10	271	10.0				21	258	17.8	17	286	14.6				10	326	8.2	11	280	6.4	12	296	15.9			
8,000				13	252	25.7	10	308	14.6										15	265	23.9	16	283	19.5																
10,000																			11	265	25.1																		

TABLE 2.—*Free-air resultant winds based on pilot balloon observations made near 2200 G. C. T., during April 1948. Directions given in degrees from north (N=360°, E=90°, S=180°, W=270°). Speeds in meters per second*—Continued

Altitude (meters) m. s. l.	Oakland, Calif. (8 m.)			Oklahoma City, Okla. (396 m.)			Omaha, Nebr. (306 m.)			Phoenix, Ariz. (338 m.)			Rapid City S. Dak. (982 m.)			St. Louis, Mo. (181 m.)			St. Cloud, Minn. (318 m.)			San Antonio, Tex. (240 m.)			San Diego, Calif. (13 m.)			Sault Ste. Marie, Mich. (225 m.)			Seattle, Wash. (116 m.)			Spokane, Wash. (725 m.)			Washington, D. C. (24 m.)		
	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed
Surface	26	240	4.3	30	178	5.2	30	159	2.4	30	254	2.0	30	290	1.3	30	179	1.4	27	206	1.9	30	161	3.8	30	271	4.0	24	277	2.9	27	230	2.8	29	219	4.8	28	313	0.8
500	26	244	4.8	30	178	5.4	30	172	3.1	30	252	3.0				30	200	2.2	27	195	2.1	30	159	5.1	30	288	4.7	24	292	2.9	27	211	4.4				28	281	1.6
1,000	22	252	4.0	30	188	6.1	29	205	5.3	30	243	4.1	30	293	1.4	28	223	4.1	27	215	4.4	30	161	5.3	25	289	3.9	23	257	2.8	24	206	5.8	29	221	5.9	24	287	4.6
1,500	21	255	4.6	30	198	7.2	25	228	5.2	30	232	4.8	30	275	3.1	28	252	5.4	27	230	5.3	30	163	5.0	23	301	4.6	20	259	3.7	18	204	5.9	28	224	6.2	24	286	6.1
2,000	20	250	5.2	30	215	8.3	24	248	7.2	29	230	5.1	29	256	3.7	28	256	7.8	25	250	7.5	30	175	4.9	19	291	5.9	19	258	4.9	16	206	5.9	27	221	6.0	24	294	9.2
2,500	19	254	6.2	27	225	10.7	23	256	9.7	29	243	6.6	27	246	6.8	28	260	10.0	21	267	8.8	28	211	3.3	19	284	7.1	19	269	6.2				24	221	7.1	23	292	11.6
3,000	18	263	7.2	26	237	11.5	22	266	10.7	29	249	8.0	27	246	8.5	25	267	11.4	19	279	10.2	26	240	3.2	19	285	10.1	19	278	9.9				19	220	9.6	23	293	12.7
4,000	18	270	11.4	22	256	13.6	19	276	13.9	29	258	11.4	19	248	12.0	20	275	13.6	17	285	12.8	24	267	6.3	18	271	13.2	15	298	13.4				11	214	13.2	23	294	16.0
5,000	17	279	17.1	21	260	15.4	12	279	17.1	27	255	14.6	15	248	13.3	17	286	18.4	16	285	16.5	21	277	10.7	16	267	16.8	15	289	15.0				10	218	15.9	18	292	17.2
6,000	17	277	22.8	18	264	18.2	12	282	21.2	27	258	17.2	14	262	16.9	13	289	20.5	14	284	19.5	18	279	10.9	13	259	16.9	11	285	16.6							15	283	17.6
8,000				13	269	23.2	12	275	28.3	14	259	23.6										13	275	11.5															

TABLE 3.—*Free-air resultant winds based on rawin observations made near 0300 G. C. T., during April 1948. Directions given in degrees from north (N=360°, E=90°, S=180°, W=270°). Speeds in meters per second*

Altitude (meters) m. s. l.	Albuquerque, N. Mex. (1,636 m.)			Big Spring, Tex. (774 m.)			Bismarck, N. Dak. (505 m.)			Brownsville, Tex. (7 m.)			Caribou, Maine (191 m.)			Charleston, S. C. (13 m.)			Columbia, Mo. (237 m.)			Grand Junction, Colo. (1,473 m.)			Greensboro, N. C. (275 m.)			Hatteras, N. C. (3 m.)			International Falls, Minn. (360 m.)			Little Rock, Ark. (80 m.)			Miami, Fla. (12 m.)		
	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed
Surface	30	251	0.8	30	162	4.0	30	66	2.3	30	127	4.7	30	277	2.4	30	135	1.6	30	144	2.0	30	192	1.0	28	173	0.5	30	91	0.5	30	201	0.8	30	165	1.8	30	77	3.2
500										30	136	7.8	30	297	4.2	30	163	3.3	30	173	5.0				28	207	2.9	27	319	1.8	30	199	1.4	30	178	5.1	30	92	5.8
1,000				30	176	7.8	30	121	1.1	30	147	7.3	29	309	5.9	30	201	2.9	29	203	5.8				28	234	5.0	27	290	2.9	30	221	2.7	30	195	6.9	30	85	5.3
1,500				30	197	8.6	30	264	2.4	30	150	4.9	28	309	5.8	30	261	2.4	28	233	6.7	30	201	1.2	27	261	5.6	27	290	4.6	29	244	3.5	30	204	6.9	30	85	3.8
2,000	30	264	5.7	30	216	8.4	30	282	4.2	30	175	3.2	28	298	7.4	30	287	3.1	28	251	8.9	30	224	4.2	26	288	5.6	26	305	6.2	29	269	6.2	29	216	6.7	30	66	2.0
2,500	30	261	7.6	30	228	7.8	30	286	5.9	30	205	2.8	28	294	8.3	30	289	3.7	29	256	10.7	30	230	5.8	26	298	6.6	26	303	7.6	28	280	6.0	29	238	6.7	30	31	1.9
3,000	30	253	8.8	29	244	8.5	28	277	7.2	30	251	1.9	28	296	11.2	30	283	5.0	29	263	13.0	30	236	6.9	26	296	7.7	26	302	9.0	28	275	8.6	29	252	8.3	30	10	2.5
4,000	30	248	9.5	29	262	11.0	27	270	10.1	30	274	2.7	25	288	12.4	30	289	7.4	27	272	14.3	30	239	9.4	26	290	10.9	24	304	8.2	26	281	10.9	29	252	11.0	30	339	2.3
5,000	30	254	12.1	28	275	12.5	26	269	12.1	30	294	5.2	25	287	12.5	29	299	9.7	27	272	15.9	30	244	11.9	25	283	12.9	24	295	10.1	25	278	13.8	29	260	14.1	30	304	3.8
6,000	30	264	16.6	27	269	13.6	26	272	14.8	30	284	7.2	21	302	14.7	28	292	10.3	26	271	16.8	27	254	16.0	24	281	14.0	25	290	12.2	23	274	14.8	29	257	15.8	30	282	5.7
8,000	24	265	19.0	27	267	18.0	26	274	19.9	30	283	10.6	17	303	16.7	27	285	12.6	24	273	21.5	23	245	20.2	20	291	12.0	23	283	12.6	17	269	16.2	25	262	16.3	30	282	11.1
10,000	19	264	17.4	24	269	17.3	21	265	24.2	28	282	13.1	11	299	14.7	25	294	13.4	21	274	20.9	13	267	19.8	18	294	14.6	16	286	17.0	12	266	20.9	23	267	22.1	29	272	17.2
12,000	16	261	18.2	19	268	19.2	16	262	19.7	27	275	20.8				22	288	16.4	14	275	21.4	11	252	17.7	16	290	15.3	10	284	17.9	7	257	16.4				25	268	25.1
14,000	14	275	19.8	6	268	28.2	14	257	17.2	23	277	21.7				18	284	18.8	10	261	19.0	8	260	16.2	13	280	18.7										18	272	23.2
16,000	12	273	18.0				13	255	16.2							15	282	15.4	7	262	13.9	7	259	14.3	9	293	13.4												
18,000							10	262	14.5							8	310	6.3																					

	Nantucket, Mass. (14 m.)			Nashville, Tenn. (177 m.)			New Orleans, La. (6 m.)			Oakland, Calif. (31 m.)			Oklahoma City, Okla. (392 m.)			Rapid City, S. Dak. (980 m.)			San Antonio, Tex. 242 m.)			San Juan, P. R. (28 m.)			St. Cloud, Minn. (318 m.)			Santa Maria, Calif. (72 m.)			Sault Ste. Marie, Mich. (224 m.)			Spokane, Wash. (601 m.)			Tatoosh Island, Wash. (33 m.)		
	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed	Observations	Direction	Speed
Surface	28	252	1.0	29	169	0.8	30	130	1.2	30	265	4.3	29	139	3.1	30	332	1.7	30	141	5.3				30	89	0.5	30	260	2.7	30	44	1.1	30	193	2.0	29	210	2.2
500	26	288	3.5	29	202	1.9	30	141	3.3	29	250	4.7	29	144	4.2				30	143	7.7				29	197	.6	30	289	2.3	30	91	1.1				29	207	3.2
1,000	26	325	4.2	27	243	3.4	30	131	2.4	29	238	5.8	28	182	6.3	30	334	1.7	30	158	7.3				29	227	2.0	30	283	2.2	30	226	2.9	30	208	5.0	28	201	4.2
1,500	26	324	6.7	27	254	5.5	30	138	2.0	29	233	6.1	28	206	7.3	30	288	1.4	30	175	4.9				29	258	4.6	30	268	2.6	30	248	5.4	30	220	5.9	28	202	5.3
2,000	27	311	7.4	26	268	5.0	30	185	1.2	30	241	7.3	27	234	7.9	30	271	3.4	30	174	3.6				29	260	7.4	30	272	4.1	30	266	5.7	30	232	6.9	28	201	5.6
2,500	28	298	9.5	26	276	6.8	30	216	1.2	30	243	9.0	27	242	9.9	29	265	5.3	30	214	3.2				28	266	9.4	30	266	7.4	29	277	6.9	30	235	7.8	28	208	6.0
3,000	28	296	11.3	25	283	7.3	30	237	3.2	30	252	11.3	27	252	10.5	29	271	8.2	30	244	4.2				27	276	10.6	30	269	10.2	29	286	8.2	30	233	9.2	28	217	6.1
4,000	27	286	14.8	24	281	10.5	29	267	5.1	29	258	15.4	27	264	11.3	29	269	10.9	30	272	5.8				26	270	11.4	29	271	14.5	29	284	12.5	30	233	11.8	27	214	7.3
5,000	26	292	17.8	22	272	13.0	28	276	7.9	26	257	17.2	27	267	12.5	29	264	12.9	29	268	8.0				24	273	14.1	27	265	17.5	27	290	13.2	30	240	13.8	27	216	9.4
6,000	25	284	18.8	20	273	13.6	27	283	9.3	22	254	19.4	26	272	14.0	29	271	15.1	28	268	10.2				23	278	16.3	23	259	19.0	26	279	14.3	25	249	14.0	25	214	11.3
8,000	21	281	23.5	16	262	14.2	27	287	13.2	16	248	20.6	26	271	18.4	29	262	17.8	27	275	15.0				20	272	20.4	20	267	25.0	23	275	18.4	19	230	16.2	21	228	7.9
10,000	14	277	25.6	11	269	14.4	23	289	15.9	9	247	18.6	23	269	23.3	28	260	23.4	25	274	18.0				19	272	25.9	8	264	23.4	20	278	25.7	14	263	12.0	18	253	8.7
12,000	6	286	21.8	8	287	19.6				9	267	23.3	15	280	23.1	24	260	21.4	20	276	19.1				5	250	18.5				13	277	19.7	13	259	13.4	17	257	9.8
14,000				6	286	25.5				5	256	17.1	5	266	20.6	15	259	19.2	12	272	20.5										9	291	14.8	10	262	13.6	16	259	11.2
16,000																9	258	16.8	6	260	27.8										6	300	10.8	7	270	14.9	13	270	11.2

RIVER STAGES AND FLOODS FOR APRIL 1948

ELMER R. NELSON

River stages during April were above normal east of the Mississippi River except in the New England States and at a few widely scattered points. The greatest departure was along the lower Ohio River, where the stages ranged from 12 to 16 feet above normal. West of the Mississippi River, stages were slightly above normal in the North-Central States and along the Pacific Coast.

Most severe flooding during the month occurred in the Ohio Basin, the Red River of the North Valley, southern Georgia, and northern Florida. Record stages were recorded on the Licking River in Kentucky. In the Red River Valley flooding was the greatest in 50 years.

The total precipitation recorded in the United States during April 1948, and the departure from normal is given in Chart V at the end of this issue.

Hudson Bay drainage.—The severe flooding along the Red River of the North, at and below Grand Forks, N. Dak., during April 1948, was due to the melting of an unusually deep snow cover of high water content. The crest of 41.6 feet at Grand Forks was nearly 1 foot higher than the crest of 1947 (40.7). Downstream from Grand Forks the flood was the highest since 1897, and perhaps even higher. A strip 8 miles in width was virtually all under water with the exception of a few high spots and highways which had been upgraded. Much of the damage at Grand Forks and East Grand Forks was due to the fact that the two cities are built up close to the banks.

Grafton, N. Dak., on the Park River and Minto, N. Dak., on the Forrest River, both cities located some distance from the Red River, were flooded as a result of the rapid melting of the heavy dense snow cover over the two sub-basins.

On March 1, the snow cover at Petersburg, N. Dak. (west of Grand Forks, N. Dak.)was 46 inches deep and at Hillsboro, N. Dak., and points farther west, 40 inches. East of Grand Forks, at Red Lake Falls, Minn., and Fosston, Minn., the snow was 36 and 30 inches deep, respectively. North of the Petersburg, N. Dak.-Fosston, Minn., line to the Canadian border a similar or heavier snow cover was observed. South of Fargo-Moorhead, the snow depths were generally 24 inches, with 36 inches reported in one small area to the southwest. Snowfall accumulation during most of the winter was above normal, with the depth at the end of November at Fargo-Moorhead, 14.6 inches; on December 31, 15.3 inches; on January 31, 14.8 inches; on February 29, 23 inches; and on March 7, 25.2 inches.

The condition of the ground seemed favorable for less flooding than maximum, as the first snow during the season fell on comparatively dry ground with only a few inches of frost. The frost penetration, beneath the snow cover on March 1 was generally from 6 to 12 inches. This favorable condition did lessen run-off from the southern and central portions of the Valley, as considerable infiltration took place.

The break-up, though favorable for many areas in that it moved northward gradually as several late freezes occurred, was unfavorable for Grand Forks and areas farther north, as seasonal temperatures by the time the break-up reached Grand Forks were high so that melting took place rapidly.

The crest at Fargo-Moorhead was only 3 feet above flood stage and caused only a small amount of damage. Flood stage was not reached at Wahpeton-Breckenridge.

Atlantic Slope drainage.—Light to moderate flooding occurred generally along the Atlantic Slope from New Hampshire to Georgia during the first few days of April and at scattered points during the rest of the month. This general flooding was caused by the heavy rains that resulted from the passage of the cold front and squall line associated with the low pressure system that moved across the Great Lakes Region on the night of March 31–April 1.

The run-off from moderate rain and snow melt caused a moderate rise in the rivers of Maine and New Hampshire on the 3d. The snow depth throughout Maine was above normal on April 1, but the water content was deficient. Practically no snow remained in New Hampshire after this peak had passed. At the end of March, as a result of warm rains and melting snow, the Connecticut River was running full. Practically all the snow cover was depleted, but the ground was fairly well saturated with moisture. Moderately heavy rain (1–1.50 inches) on the 1st and 2d caused the river to rise to a stage of 2.1 feet above flood level at Hartford, Conn., on the 3d. The only damage reported was bank erosion.

The Rappahannock River rose sharply to near-flood stage from the heavy rain (average 1.83 inches) that occurred over the basin on the last day of March and the first day of April. Light flooding occurred in the Potomac Basin between the 14th and 17th, following the light to heavy rain that fell over the basin from the 11th to the 14th. Rainfall was heaviest over the headwaters of the Potomac, averaging 3.50 inches above Cumberland, Md., and 2 inches above Springfield, W. Va. No damage of consequence resulted.

Heavy rains concentrated over the Pedlar, Tye, Rockfish, Hardware, and Rivanna Rivers (3.05 to 3.56 inches) in Virginia during the late afternoon and the night of April 1, produced stages of 1–2 feet above flood stage in the James River by 8 a. m. on the 1st. Except for some slight inconvenience of moving from threatened dwellings, no damage of consequence was reported.

Minor flooding occurred in the Cape Fear, Neuse, and Roanoke Rivers in North Carolina from the heavy rain over the headwaters between March 31–April 1. The principal rises were in the upper reaches of the Roanoke River where the stage at Alta Vista, Va., rose from 6.9 feet on March 31 to 22.0 feet on the morning of April 1. The principal losses were to logging and fishing interests.

Heavy rains (1.50 to 2 inches) over South Carolina for the 36 hours March 31–April 1 caused light to moderate flooding in the principal streams in that State. Lowlands were flooded for a short time, but damage was light. One man was drowned in the Wateree River below Camden, S. C.

Exceedingly heavy rainfall from March 31–April 1 produced rapid rises in the streams in the lower part of Georgia. The total rainfall for the 2 days ranged from 5 inches to as much as 15 inches south of the Albany-Lumber City line to slightly less than 2 inches above this section. The lower portions of the Ocmulgee and Oconee Rivers and upper Altamaha River crested 5 to 10 feet or more above flood stage. Most of the damages were due directly to torrential rains rather than to the resulting overflows.

East Gulf of Mexico drainage.—Light to moderate flooding occurred from southern Georgia and Florida to Louisiana during the month.

Heavy to excessive rains over southern Georgia and Florida during the period March 31–April 2 caused moderate flooding on the Flint, Apalachicola, and Choctawhatchee Rivers. The heaviest rain occurred over the lower Flint and upper Apalachicola Basins, with storm totals of 10 to 15 inches. Rainfall over the Choctawhatchee River Basin averaged about 7.75 inches. The Flint and Apalachicola Rivers crested 4 to 8 feet above flood stage, and the lower Choctawhatchee, slightly over 1 foot

above flood level. Farm lands were flooded and badly washed; highways and railroad lines were washed out in many sections and made impassable; numerous towns and communities were flooded to some extent, and some evacuation work was necessary along the Flint and Apalachicola Rivers. Along the Choctawhatchee River some damage was done to recently planted crops. Most of the damage was to highways and bridges.

A general rise occurred in the Tombigbee and the Warrior Rivers in Alabama on the 13th, following heavy rains on the 13th and 14th that averaged 1.25 inches over the upper Warrior Basin, 1.50 inches over the upper Tombigbee Basin and 1.75 inches over the lower Tombigbee area. Moderate flooding resulted on the Lower Tombigbee and on the Warrior at Eutaw, Ala. Damage was small and was confined mostly to lumbering operations.

Moderate flooding occurred on the Pearl River in Mississippi and Louisiana as a result of the excessive rain over the basin during the night of April 12–13. Little damage resulted from this overflow as most stations had just recently receded within the banks from a previous prolonged flood.

Upper Mississippi and Missouri Basins.—Moderate flooding occurred in the Upper Mississippi River and in the Illinois and Rock Rivers in Illinois during the latter part of March and the first week of April due to snow melt and the heavy rains of March 16, 19, and 26.

Light flooding occurred in the Missouri River at Nebraska City, Nebr., between the 8th and 9th.

Ohio Basin.—A major flood occurred on the Ohio River from April 13 to 30, from Pittsburgh, Pa., to Cairo, Ill. The rise was very rapid with rises of 16.8 feet at Parkersburg, W. Va., and 19.4 feet at Dam No. 22 near Ravenswood, W. Va., during the 24-hour period ending at 7 a. m., on April 13. This was the highest flood that has occurred on the Ohio so late in the spring and the highest since March 1945. Flood stage was exceeded for the first time since 1945 at Pittsburgh. A comparison of the crests at representative cities along the Ohio with the ones in 1945 and the highest of record are given in Table 1.

The Ohio River at Cincinnati, Ohio, has been in flood 61 times during the 90-year period beginning in 1859. During that period 17 major floods with crests 60 feet or higher have occurred. All of these major floods crested during the first 4 months of the year, five each in February and March, four in January, and three in April. During the 90-year period, the Ohio River has exceeded the 64-foot level seven times.

TABLE 1.—*Comparative Ohio River crests*

Station	Flood stage	1948 crest	1945 crest	Highest crest of record	
				Crest	Year
	Feet	*Feet*	*Feet*	*Feet*	
Pittsburgh, Pa.	25	29.8	33.4	46.0	1936
Wheeling, W. Va.	36	44.2	47.3	55.2	1936
Parkersburg, W. Va.	36	47.9	48.5	58.9	1913
Point Pleasant, W. Va.	40	55.4	53.0	62.8	1913
Huntington, W. Va.	50	61.7	59.9	69.4	1937
Portsmouth, Ohio	50	64.1	64.9	74.2	1937
Cincinnati, Ohio	52	64.8	69.2	80.0	1937
Louisville, Ky.	28	41.0	47.1	57.1	1937
Evansville, Ind.	42	45.6	48.3	53.75	1937
Paducah, Ky.	39	43.6	50.5	60.6	1937
Cairo, Ill.	40	51.6	53.9	59.5	1937

Severe flooding also resulted in the various tributaries in Kentucky, West Virginia, and southern Ohio, with maximum stages of record recorded on the Licking River at Falmouth, Ky., and on the South Fork at Cynthiana, Ky. The crest at Falmouth, Ky., was 0.4 foot above the maximum stage of record, established January 23, 1937; and at Cynthiana, 0.7 foot above the highest stage, established December 24, 1921. The crest at Chillicothe, Ohio, on the Scioto River, was the highest in 3 years, and at Piketon, Ohio, the highest in 4 years. Other tributaries in which flood stages were observed are included in the table at the end of this report.

The spring flood of 1948 was caused by three rainy periods during the first half of April. Light rains occurred on the 1st and 2d, and moderate amounts fell from the 6th to the 9th. The rainfall during these two periods caused the streams to rise to one-half to three-fourths bankful stage. The stages had not returned to normal when the third rainy period began. The rainfall which contributed chiefly to the Ohio River flood began April 11, and continued intermittently moderate to heavy until the morning of April 15. Rainfall was heaviest in central and northern Ohio and West Virginia causing the Ohio and its tributaries to rise rapidly to flood stage. When the last rain period began, the Ohio River was in pool above Gallipolis Dam, W. Va., a factor which helped considerably in preventing a more serious flood in the eastern section of the basin. Below Gallipolis moderate stages were continuing from a rise that had developed earlier in April. Table 2 gives a few storm totals for the period April 11–15 for selected stations where totals exceeded 5 inches.

TABLE 2.—*Comparative precipitation, April 11–15, in the Ohio River Basin*

[Storm total in inches]

Station	Storm total	Station	Storm total
Creston, W. Va.	6.45	Dam 19, Ohio River	5.34
Dam 32, Ohio River	6.12	Dam 30, Ohio River	5.32
Berea, Ky.	6.12	Dam 34, Ohio River	5.29
Dam 33, Ohio River	5.84	Lock 4, Kentucky River	5.29
Chillicothe, Ohio	5.72	Dam 17, Ohio River	5.23
Frankfort, Ky.	5.65	Parkersburg, W. Va.	5.22
Athens, Ohio	5.55	Dam 20, Ohio River	5.12
Flemingsburg, Ky.	5.52	Dam 21, Ohio River	5.12
Cynthiana, Ky.	5.50	Dam 16, Ohio River	5.11
Dam 23, Ohio River	5.48		

White, Arkansas, and Red Basins.—Minor flooding occurred on the White, Petit Jean, Black, and Ouachita Rivers during April. The flood on the lower White River was a continuation of the flood from March. The damage along this river was unusually small due to levee protection. Along the other rivers it was also minor, resulting mostly in the retardation in preparation of ground for crops.

Lower Mississippi and Atchafalaya Basins.—Moderate rains fell over the St. Francis River Basin on March 22, 26–27, and 31. The river passed above flood stage at St. Francis, Ark., and at Fisk, Mo. Heavy rains, averaging 2 inches over the basin, fell on April 12–13, causing the river, which had fallen below flood stage at Fisk to rise again and crest at 20.8 ft. at that point on the 16th, and 19.4 ft. at St. Francis, Ark., on the 18th. No damage was reported.

The Tallahatchie and Yazoo Rivers continued to fall slowly during April from the peak crests reached in February and March. The Yazoo had fallen below flood stage at Greenwood, Miss., by the 8th but continued above flood stage at Yazoo, Miss., throughout the month.

The Mississippi River rose above flood stage at Caruthersville, Mo., on February 21, due to the heavy rains over the Ohio Basin near the middle of February. It crested at 34.7 feet on February 26–27 and went below flood stage on March 15. The Mississippi River rose again

above flood stage at Caruthersville on March 25, from the heavy rains over the Ohio on March 16 and March 22–23. It crested at 39.3 feet on April 4–5. Another rise occurred after the heavy rains on the Ohio before the middle of the month, going below flood stage on May 3.

Flood stage or slightly higher was reached at Red River Landing and Baton Rouge, La., on the lower Mississippi, and at Melville, Atchafalaya, and Morgan City, La., on the Atchafalaya. Morgan City stages are greatly affected by tides and winds, and the flood stage at that point was reached or exceeded during some part of each day from April 11–16 and April 20–30, inclusive. Monroe, La., on the Ouachita River was above flood stage from March 18–April 10.

West Gulf of Mexico drainage.—Heavy rains fell over the central and lower Sabine Basin from April 13–15. The heaviest rains amounted to nearly 6 inches and were centered near Milam, Tex. Moderate rises occurred on the Sabine River with light flooding only in the lower reaches.

Slight flooding occurred in the Animas River in Colorado and at two stations on the Rio Grande, as a result of melting snow, but no damage resulted.

Sacramento River Basin.—A substantial rise occurred in the Sacramento River during the last half of April as a result of frequent rains, but no flood stages were reached.

The Sierra region had an abundance of late seasonal snowfall. Norden, Calif., near Donner Summit, had 102 inches of snow pack on the 11th, and Blue Canyon, 48 inches. On the 15th and 16th a storm from the southern Pacific brought in warm, moist air that produced heavy rains over the snowfall. The resulting run-off from rain, plus continued melting of snow for 3 or 4 days after the weather cleared, caused the already well-loaded Sacramento River to accumulate excessive water in the Knights Landing-Verona section. Consequently, overflow was started at Fremont Weir into Yolo Bypass. The maximum overflow depth there was 1.3 feet on the 19th. At nearby Knights Landing, the highest river stage was 36.6 feet, 1.4 feet below flood stage.

The Yolo Bypass road to Woodland, Calif., was closed for two days beginning on the 19th. Water continued to flow over Fremont Weir for about a week and spread over one-half or more of the Yolo Bypass flood-control basin. The bypass lands are usually flooded more or less during the midwinter rainy season, and no farming is done on these unprotected lands until after the water drains off in the spring. This year, however, with the winter season almost rainless, more than usual planting of the bypass lands resulted. Several thousand acres of grain and rice land were inundated from the heavy April rains, and the crops will be almost a total loss, as the water is slow in draining off these lands.

FLOOD STAGE REPORT FOR APRIL 1948

[All dates in April unless otherwise specified]

River and station	Flood stage	Above flood stages—dates		Crest [1]	
		From—	To—	Stage	Date
HUDSON BAY DRAINAGE					
Red of North:	*Feet*			*Feet*	
Moorhead, Minn.	17	8	12	18.0	10
Grand Forks, N. Dak.	28	8	29	41.6	17
ST. LAWRENCE DRAINAGE					
Lake Huron					
Flint: Columbiaville, Mich.	10	1	9	12.6	3
		11	17	11.4	15
Lake Erie					
St. Marys: Decatur, Ind.	13	13	19	17.3	16
St. Joseph: Montpelier, Ohio	10	2	2	10.2	2

See footnotes at end of table.

FLOOD STAGE REPORT FOR APRIL 1948—Continued

River and station	Flood stage	Above flood stages—dates		Crest [1]	
		From—	To—	Stage	Date
ATLANTIC SLOPE DRAINAGE					
Pemigewasset:	*Feet*			*Feet*	
Woodstock, N. H.	10	1	1	10.0	1
Plymouth, N. H.	11	1	2	13.0	2
Connecticut: Hartford, Conn.	16	Mar. 21	5	24.5	Mar. 24
				19.2	Mar. 29
				18.1	3
Delaware: Easton, Pa.	22	Mar. 23	Mar. 23	22.3	Mar. 23
West Branch:					
Williamsport, Pa.	20	15	15	20.6	15
Lewisburg, Pa.	18	15	16	20.0	15
Little Juniata: Spruce Creek, Pa.	7	12	15	9.0	12
				9.6	14
South Branch: Springfield, W. Va.	15	14	14	15.9	14
Potomac: Washington (near), D. C.	10	16	16	10.7	16
James:					
Bremo Bluff, Va.	19	1	2	25.0	1
Columbia, Va.	18	1	3	27.6	2
State Farm, Va.	12	1	3	18.0	2
Richmond, Va.	8	2	3	13.3	2
Dan: Danville, Va.	11	1	1	11.8	1
Roanoke:					
Aita Vista, Va.	10	1	2	22.0	1
Randolph, Va.	21	2	3	24.6	3
Weldon, N. C.	31	3	5	39.2	4
Scotland Neck, N. C.	28	4	11	31.2	5
Williamston, N. C.	10	Feb. 10	24	11.1	Mar. 15
				11.5	8
Neuse:					
Neuse, N. C.	14	3	4	14.8	4
Smithfield, N. C.	13	4	5	14.1	5
Cape Fear: Lock No. 2, Elizabethtown, N. C.	20	3	5	23.7	4
Pee Dee:					
Cheraw, S. C.	30	2	3	33.8	3
Pee Dee, S. C.	19	Mar. 31	18	22.1	7
Saluda:					
		1	2	6.5	1
Pelzer, S. C.	6	4	4	6.0	4
		8	8	6.0	8
Chappells, S. C.	13	1	3	19.6	1
Broad: Blairs, S. C.	14	1	2	18.5	2
Catawba:					
Catawba, N. C.	8	1	1	8.5	1
Catawba, S. C.	11	1	2	13.5	1
Wateree: Camden, S. C.	23	1	3	28.0	2
Edisto:					
		1	8	9.3	2
Orangeburg, S. C.	8	13	14	8.2	13
Givhans Ferry, S. C.	10	Mar. 1	21	14.3	6-7
Savannah: Butler Creek, Ga.	21	2	3	22.9	3
Ogeechee:					
		2	8	6.9	3
Midville, Ga.	6	11	11	6.0	11
Dover, Ga.	7	Jan. 21	21	9.9	5
Ocmulgee:					
Macon, Ga.	18	2	2	18.0	2
				14.2	Mar. 14
Abbeville, Ga.	11	Mar. 9	17	12.7	Mar. 24
				12.9	Mar. 31
				13.8	8
Lumber City, Ga.	12	1	(3)	18.8	3
Oconee:					
Milledgeville, Ga.	20	2	3	23.1	2
Mount Vernon, Ga.	16	Mar. 31	11	17.5	8
Altamaha:					
				20.7	Feb. 21
Charlotte, Ga.	12	Jan. 25	24	20.1	Mar. 18-19
				21.8	4
				20.7	Mar. 18-19
Piney Bluff, Ga.	17	Feb. 10	21	21.9	5
Doctortown, Ga.	10	3	6	10.0	3-6
EAST GULF OF MEXICO DRAINAGE					
Flint:					
Albany, Ga.	20	2	5	27.9	2
Bainbridge, Ga.	25	2	12	33.3	5
Apalachicola:					
Chattahoochee, Fla.	20	2	11	24.1	5
				21.0	Feb. 15-16
Blountstown, Fla.	15	Jan. 25	28	22.1	Mar. 12
				20.7	Mar. 28
				22.8	6
Choctawhatchee: Carryville, Fla.	12	2	7	13.4	2
Etowah: Cartersville, Ga.	18	Mar. 24	Mar. 24	18.0	Mar. 24
Black Warrior: Eutaw, Ala.	35	16	18	38.2	17
Tombigbee:					
				54.3	Mar. 1
		Feb. 9	7	56.1	Mar. 11-12
Lock No. 4, Demopolis, Ala.	39			47.1	Mar. 30
		14	22	47.9	18
				56.9	Mar. 1
Lock No. 3	33	Jan. 31	24	57.4	Mar. 8
				49.6	Mar. 25
				49.7	19
				59.0	Mar. 1,4
Lock No. 2	46	Feb. 10	7	59.5	Mar. 8
				52.0	Mar. 25
		15	22	51.1	19

FLOOD STAGE REPORT FOR APRIL 1948—Continued

River and station	Flood stage	Above flood stages—dates		Crest [1]	
		From—	To—	Stage	Date
EAST GULF OF MEXICO DRAINAGE—con.					
Tombigbee—Continued	*Feet*			*Feet*	
Lock No. 1	31	Feb. 11	25	42.7	Mar. 8
				35.0	21–22
Pearl:					
Jackson, Miss	18	15	26	23.9	21
Pearl River, La	12	Feb. 13	5	17.7	Mar. 7
		18	29	13.7	21
MISSISSIPPI SYSTEM					
Upper Mississippi Basin					
Rock: Moline, Ill	10	Mar. 16	6	14.5	Mar. 23
Illinois:					
Peru, Ill	17	Mar. 19	2	23.5	Mar. 20
Peoria, Ill	18	Mar. 20	6	22.2	Mar. 24
Havana, Ill	14	Mar. 19	19	19.8	Mar. 24
Beardstown, Ill	14	Mar. 20	21	21.6	Mar. 31
Mississippi:					
Fort Ripley, Minn	10	26	(2)	10.7	29–30
Gordons Ferry, Iowa	13	Mar. 31	1	13.0	Mar. 31–Apr. 1
Grafton, Ill	18	Mar. 22	6	25.2	Mar. 27
St. Louis, Mo	30	Mar. 23	1	34.6	Mar. 27
Chester, Ill	27	Mar. 24	4	32.7	Mar. 28
Cape Girardeau, Mo	32	Mar. 23	7	37.8	Mar. 29
Missouri Basin					
Missouri: Nebraska City, Nebr	15	8	9	15.9	9
Ohio Basin					
Allegheny:					
Olean, N. Y	10	15	15	11.2	15
Lock No. 8 near Mosgrove, Pa	24	Mar. 22	Mar. 25	30.0	Mar. 23
Lock No. 5, Schenley, Pa	24	15	15	24.2	15
		13	16	25.2	13
				27.7	15
Lock No. 4, Natrona, Pa	[3] 19.5	14	15	20.5	15
Lock No. 3, Acmetonia, Pa	[3] 20	14	15	20.4	15
Tygart: Daily, W. Va	9	13	14	10.5	14
West Fork: Weston, W. Va	17	13	13	17.9	13
Monongahela:					
Lock No. 7, Greensboro, Pa	[3] 21	12	15	23.1	13
Lock No. 6, Rices Landing, Pa	19.5	13	15	22.7	13
Lock No. 4, Charleroi, Pa	[3] 23	12	15	29.3	14
Muskingum:					
Lock No. 7, McConnellsville, Ohio	22	13	15	23.1	15
Lock No. 3, Lowell, Ohio	25	14	17	29.2	15
Little Kanawha:					
Glenville, W. Va	23	13	15	27.6	13
Creston, W. Va	20	13	15	26.9	14
Hocking:					
Enterprise, Ohio	12	13	15	17.0	14
Athens, Ohio	17	12	16	21.8	13
Greenbrier: Renick, W. Va	17	14	14	17.0	14
Olentangy: Delaware, Ohio	9	13	14	10.3	13
Scioto:					
LaRue, Ohio	11	7	7	12.0	7
		13	15	12.5	14
Prospect, Ohio	10	13	16	11.8	15
Circleville, Ohio	14	13	17	19.7	14
Chillicothe, Ohio	16	14	17	22.4	15
Piketon, Ohio	15	13	18	26.5	14
Little Miami: Kings Mills, Ohio	17	12	12	17.2	12
South Fork: Cynthiana, Ky	20	13	14	23.3	13
Licking:					
Farmers, Ky	25	13	16	41.8	14
Falmouth, Ky	28	13	16	41.8	14
Kentucky:					
Lock No. 10, Ford, Ky	20	13	16	24.0	15
Lock No. 9, Valley View, Ky	20	Mar. 29	Mar. 29	20.1	Mar. 29
		9	10	20.8	9
		13	17	28.7	15
Lock No. 7, Highbridge, Ky	30	14	14	30.7	14
Lock No. 5, Tyrone, Ky	20	13	17	34.8	15
Lock No. 4, Frankfort, Ky	31	14	16	35.1	15
Lock No. 2, Lockport, Ky	40	14	17	43.5	15
Rough: Dundee, Ky	25	1	1	25.3	1
		15	18	27.2	16
Green:					
Munfordville, Ky	28	13	18	41.6	15
Lock No. 6, Brownsville, Ky	28	Mar. 29	Mar. 29	28.5	Mar. 29
		13	19	39.7	16

See footnotes at end of table.

FLOOD STAGE REPORT FOR APRIL 1948—Continued

River and station	Flood stage	Above flood stages—dates		Crest [1]	
		From—	To—	Stage	Date
MISSISSIPPI RIVER—continued					
Ohio Basin—Continued	*Feet*			*Feet*	
Green—Continued		Mar. 18	Mar. 19	33.4	Mar. 19
Lock No. 4, Woodbury, Ky	33	Mar. 27	1	38.3	Mar. 30
		14	20	40.8	17
Lock No. 2, Rumsey, Ky	34	Feb. 16	Mar. 6	41.1	Mar. 23
		Mar. 27	7	38.9	3
		14	28	40.6	22
West Fork:					
Anderson, Ind	10	6	9	13.1	7
		12	15	14.1	14
Noblesville, Ind	14	8	9	14.7	8
		15	15	14.9	15
Spencer, Ind	14	Mar. 25	1	20.0	Mar. 26–29
		8	18	19.2	9
				18.1	16
Elliston, Ind	18	Mar. 24	3	26.5	Mar. 30
		8	19	24.5	13
				22.6	1
Edwardsport, Ind	12	Mar. 21	23	21.7	14
				20.2	18
East Fork:					
Seymour, Ind	14	9	10	15.2	9
		13	15	16.0	13
Bedford, Ind	12.5	Mar. 27	4	22.6	Mar. 31
		10	21	23.9	17
Williams, Ind	10	Mar. 31	1	10.3	Mar. 31
		16	18	11.8	17
White:					
Petersburg, Ind	16	Mar. 27	6	23.1	2
		11	23	23.0	15
Hazleton, Ind	16	Mar. 27	8	24.3	2–3
		11	24	24.1	16
Wabash:					
Bluffton, Ind	10	14	16	11.6	15
Wabash, Ind	12	8	9	13.5	8
		14	16	16.4	14
Lafayette, Ind	11	1	2	12.6	1–2
		8	18	16.8	16
Covington, Ind	16	Mar. 22	3	21.9	Mar. 25
		8	19	20.2	17
				21.2	Mar. 28
Terre Haute, Ind	14	Mar. 22	21	18.5	9
				17.9	14
Vincennes, Ind	14	Mar. 27	24	23.3	1
				20.0	14
Mt. Carmel, Ill	17	Mar. 28	25	23.9	3
				22.9	17
New Harmony, Ind	15	Mar. 30	10	19.4	4–5
		13	25	18.3	18
Cumberland: Lock F, Eddyville, Ky	50	1	4	51.1	2–3
Tennessee: Kentucky Dam, Ky	31	Mar. 24	(2)	40.7	2
				39.2	16
				41.3	24–25
Ohio:					
Pittsburgh, Pa	25	13	16	29.8	15
Coraopolis, Pa	26	14	15	28.4	15
Dam No. 7, Midland, Pa	30	13	16	40.6	15
Dam No. 9, New Cumberland, W. Va	34	14	16	39.3	15
Dam No. 10, Steubenville, Ohio	36	14	16	41.0	15
Dam No. 12, near Wheeling, W. Va	36	13	17	44.2	15
Dam No. 13, near Wheeling, W. Va	45	15	16	47.4	15
Dam No. 14, Woodlands, W. Va	37	14	17	46.1	15
Dam No. 15	37	14	17	45.5	15
Dam No. 16	38	14	17	45.8	15
Dam No. 17	35.2	13	18	44.7	16
Dam No. 18	38	13	18	48.1	16
Marietta, Ohio, Lower Gage (Muskingum)	35	13	18	47.1	15
Parkersburg, W. Va	36	13	18	47.9	16
Dam No. 19, Little Hocking, Ohio	40	14	18	50.5	16
Dam No. 20, near Belleville, W. Va	45	15	18	50.9	16
Dam No. 21, Portland, Ohio	50	16	17	52.2	16
Dam No. 22, Ravenswood, W. Va	44	14	18	54.3	16
Dam No. 23, Racine, Ohio	45	14	19	56.7	16
Point Pleasant, W. Va	40	14	20	55.4	16
Gallipolis Dam, Hogsett, W. Va. Lower Gage	50	14	19	61.1	16
Dam No. 28, Huntington, W. Va	50	14	20	61.7	17
Dam No. 29, Ashland, Ky	51	14	20	65.3	17
Dam No. 30, near Greenup, Ky	52	14	21	65.6	17
Portsmouth, Ohio	50	14	21	64.1	17

FLOOD STAGE REPORT FOR APRIL 1948—Continued

River and station	Flood stage	Above flood stages—dates		Crest [1]	
		From—	To—	Stage	Date
MISSISSIPPI SYSTEM—continued					
Ohio Basin—Continued					
Ohio—Continued	*Feet*			*Feet*	
Dam No. 32, near Vanceburg, Ky.	53	14	21	64.7	17
Dam No. 33, near Maysville, Ky.	50	14	22	64.0	17-18
Dam No. 34, Chilo, Ohio	49	14	22	61.2	18
Dam No. 35, New Richmond, Ohio	48	14	22	61.6	18
Dam No. 36, near Brent, Ky.	52	14	22	65.5	18
Cincinnati, Ohio	52	14	22	64.8	18
Dam No. 37, Fernbank, Ohio	50	14	23	64.1	18
Dam No. 39, Markland, Ind.	48	14	23	57.6	18
Madison, Ind.	46	13	23	56.5	18
Dam No. 41, Louisville, Ky.—					
Upper Gage	28	14	24	41.0	19
Lower Gage	55	14	24	68.0	19
Dam No. 43, Evans Landing, Ind.	57	13	24	69.0	19
Dam No. 44, Leavenworth, Ind.	53	Mar. 28	2	56.4	Mar. 30
		13	25	67.9	19
Dam No. 45, Addison, Ky.	47	Mar. 29	2	49.3	Mar. 31
		13	25	57.8	20
Tell City, Ind.	38	Mar. 28	4	42.6	Mar. 31
		12	26	49.0	20
Dam No. 46, Owensboro, Ky.	41	Mar. 31	2	41.6	1
		14	26	47.0	21
Dam No. 47, Newburgh, Ind.	38	Mar. 28	6	44.1	2
		12	28	48.1	22
Evansville, Ind.	42	15	27	45.6	21
Dam No. 48, near Henderson, Ky.	38	Mar. 28	7	43.7	2
		12	29	48.7	22-23
Mount Vernon, Ind.	35	Mar. 28	[2]	41.4	4
				47.1	23
Dam No. 49, Uniontown, Ky.	37	Mar. 29	[2]	43.7	5
				49.6	24
Shawneetown, Ill.	33	Mar. 26	[2]	44.1	5
				50.4	24
Dam No. 50, Fords Ferry, Ky.	34	Mar. 24	[2]	46.9	5
				52.9	23-24
Dam No. 51, Golconda, Ill.	40	Mar. 31	10	44.0	5
		14	30	48.1	23
Paducah, Ky.	39	Mar. 29	10	42.3	4
		13	30	43.6	24
Dam No. 52, Brookport, Ill.	37	Mar. 24	[2]	44.7	4
				45.5	24
Dam No. 53, near Mound City, Ill.	42	Mar. 23	[2]	51.6	2
				50.2	24
				51.6	3
Cairo, Ill.	40	Mar. 22	[2]	47.3	16-17
				47.9	23-25
White Basin					
White:					
Georgetown, Ark.	21	1	4	21.1	2-3
Clarendon, Ark.	26	Feb. 29	17	28.4	Mar. 8-14
St. Charles, Ark.	25	Mar. 1	26	26.9	Mar. 13-14
Arkansas Basin					
Petit Jean: Danville, Ark.	20	12	14	21.5	14
Red Basin					
Ouachita:					
Arkadelphia, Ark.	17	14	14	17.2	14
Camden, Ark.	26	Mar. 23	1	34.3	Mar. 26

FLOOD STAGE REPORT FOR APRIL 1948—Continued

River and station	Flood stage	Above flood stages—dates		Crest [1]	
		From—	To—	Stage	Date
MISSISSIPPI SYSTEM—continued					
Red Basin—Continued					
Ouachita—Continued	*Feet*			*Feet*	
Monroe, La.	40	Mar. 18	10	40.2	Mar. 23,
				40.2	Mar. 24, 5-6
Black Rock, Ark.	14	13	20	17.3	14
Lower Mississippi Basin					
St. Francis:					
Fisk, Mo.	20	Mar. 31	7	22.8	3
		15	17	20.8	16
St. Francis, Ark.	18	Mar. 31	23	19.4	7-9
				19.4	18
Coldwater: Sarah, Miss.	18	14	14	18.2	14
Tallahatchie: Swan Lake, Miss.	26	Mar. 1	[2]	30.1	Mar. 21
Yazoo:				37.9	Mar. 2
Greenwood, Miss.	35	Mar. 1	8	37.4	Mar. 6
				37.3	Mar. 17
				37.3	Mar. 25
				37.3	Mar. 27
				35.6	Mar. 19, Mar. 20
Yazoo City, Miss.	29	Mar. 1	[2]	35.6	Mar. 23
				35.6	9
				35.4	14
Mississippi:				40.5	3-5
New Madrid, Mo.	34	Mar. 25	[2]	37.3	17-18
				37.5	24-26
Caruthersville, Mo.	32	Mar. 25	[2]	39.3	4-5
Memphis, Tenn.	34	2	15	36.5	8
Helena, Ark.	44	6	16	45.2	10-11
Red River Landing, La.	45	16	27	45.3	19-20
Baton Rouge, La.	35	14	May 1	35.8	19-22
Atchafalaya Basin					
Atchafalaya:					
Melville, La.	37	17	[2]	37.3	21-22
Atchafalaya, La.	25	Feb. 26	[2]	26.9	Mar. 13-18
				27.3	21-29
Morgan City, La.	[4] 6	11	16	6.8	13
		20	30	6.9	26
WEST GULF OF MEXICO DRAINAGE					
Sabine: Bon Wier, Tex.	17	16	20	19.5	18
Rio Grande:					
Lobatos Bridge, Colo.	4	22	24	4.2	23
Espanola, N. Mex.	7	19	25	7.3	21-24
GULF OF CALIFORNIA DRAINAGE					
Colorado Basin					
Animas: Durango, Colo.	4	17	17	4.2	17
		20	21	4.5	21

[1] Provisional.
[2] Continued at end of month.
[3] Upper Lock Gage datum.
[4] Flood stage or higher reached intermittently due to winds and tides.

CLIMATOLOGICAL DATA FOR APRIL 1948

CONDENSED CLIMATOLOGICAL SUMMARY OF TEMPERATURE AND PRECIPITATION, BY SECTIONS

[For description of tables and charts, see REVIEW, January 1943, p. 15]

In the following table are given for the various sections of the climatological service of the Weather Bureau the monthly average temperature and total rainfall; the stations reporting the highest and lowest temperatures, with dates of occurrence; the stations reporting the greatest and least total precipitation; and other data as indicated by the several headings.

The mean temperature for each section, the highest and lowest temperatures, the average precipitation, and the greatest and least monthly amounts are found by using all trustworthy records available.

The mean departures from normal temperatures and precipitation are based only on records from stations that have 10 or more years of observations. Of course, the number of such records is smaller than the total number of stations.

Section	Temperature								Precipitation					
			Monthly extremes								Greatest monthly		Least monthly	
	Section average	Departure from the normal	Station	Highest	Date	Station	Lowest	Date	Section average	Departure from the normal	Station	Amount	Station	Amount
	°F.	°F.		°F.			°F.		In.	In.		In.		In.
Alabama	68.0	+4.5	3 stations	91	[1] 22	Valley Head	32	3	3.79	−0.84	Hytop	7.54	Muscle Shoals	1.58
Arizona	59.7	+1.3	Mohawk	107	16	Alpine	7	1	.09	−.55	Chinle	.64	67 stations	.00
Arkansas	66.2	+4.5	2 stations	93	[1] 28	Gilbert	27	2	3.46	−1.54	Gravelly	7.31	Green Forest	.64
California	53.1	−2.9	Palm Springs	110	16	Twin Lakes	−2	12	4.65	+2.93	West Branch	21.27	15 stations	.00
Colorado	46.3	+2.4	Eversoll Ranch	97	18	Taylor Park	−19	1	1.18	−.62	Marshall Pass	4.62	Box Ranch	.00
Florida	73.2	+3.1	Carrabelle	95	28	Chipley	42	3	4.54	+1.58	Quincy	14.25	Cedar Key	.40
Georgia	67.0	+3.5	West Point	93	27	Blairsville	28	3	4.50	+.61	Bainbridge	16.14	Toccoa	1.57
Idaho	43.3	−1.8	Grand View	87	28	Obsidian	−9	7	2.20	+.76	Burke	6.53	2 stations	T
Illinois	57.1	+4.6	E. St. Louis	91	7	2 stations	22	9	2.04	−1.55	New Burnside	7.06	Vandalia	.87
Indiana	56.0	+4.6	Madison	90	25	Notre Dame	20	3	3.85	+.23	Tell City	8.57	Columbia City	1.41
Iowa	54.5	+5.5	Sioux Rapids	93	18	Inwood	17	[1] 1	2.66	+.04	Cedar Falls	4.99	Newton	1.39
Kansas	61.1	+6.2	Lakin	100	18	Burr Oak	17	1	1.28	−1.41	Morrill	4.80	Scott City	.00
Kentucky	60.4	+4.1	Pikeville	94	26	Mammoth Cave	24	3	5.49	+1.48	Mount Sterling	10.93	Earlington	1.40
Louisiana	70.7	+3.5	3 stations	95	[1] 18	3 stations	34	2	3.40	−1.28	Simmsport	6.22	New Orleans Airport	1.10
Maryland - Delaware	53.8	+1.3	Hancock, Md.	88	20	Oakland, Md.	19	4	3.67	+.19	Sines, Md.	7.38	Fort George G. Meade, Md.	1.88
Michigan	47.6	+4.8	Caro	90	26	Calumet	−1	3	2.83	+.43	Howell	5.25	Germfask	.94
Minnesota	45.8	+2.7	2 stations	85	18	Hallock	−7	2	2.69	+.56	Pigeon River Bridge	6.58	Hallock	.38
Mississippi	68.1	+3.4	Poplarville	92	27	Vicksburg Airport	32	2	4.22	−.67	Enterprise	7.61	Grenada	1.69
Missouri	60.6	+5.2	2 stations	91	27	Maryville	22	1	1.81	−2.23	Doniphan No. 1	4.85	Marshall	.39
Montana	42.8	−.5	Hysham	93	29	Fairview	−7	8	1.30	+.17	Heron	5.10	Whitehall	.13
Nebraska	55.3	+5.9	2 stations	96	18	2 stations	12	8	1.11	−1.28	Falls City	4.02	2 stations	T
Nevada	47.9	−.2	Las Vegas	97	26	Smith	8	7	.65	−.14	Marlette Lake	4.60	3 stations	.00
New England	44.1	+.5	Cavendish, Vt.	78	20	2 stations	9	11	3.24	−.10	Pinkham Notch, N. H.	5.91	East Barnet, Vt.	1.62
New Jersey	50.4	+.6	Belvidere	83	21	Layton	18	18	3.68	+.07	Hammonton	5.56	Woodstown	2.11
New Mexico	55.4	+3.8	3 stations	99	[1] 18	Red River	−2	1	.28	−.60	Selsor Ranch	1.52	24 stations	.00
New York	47.1	+2.8	Elmira	85	20	3 stations	12	[1] 4	3.74	+.71	Walton	6.27	Ogdensburg	1.97
North Carolina	61.7	+3.6	Clinton	97	24	Transou	22	4	2.78	−.78	Andrews	5.42	Old Fort	.64
North Dakota	40.3	−1.3	2 stations	85	17	Willow City	−13	2	2.15	+.72	Pettibone	5.21	Trotters	.75
Ohio	54.7	+4.8	Hillsboro	93	25	Mansfield	18	10	5.02	+1.78	Jackson	8.17	Paulding	2.02
Oklahoma	66.0	+5.5	3 stations	99	30	Kenton	20	1	1.70	−1.83	Apache	5.27	Kenton No. 2	.00
Oregon	42.8	−4.4	Lake Creek	90	15	Sand Creek	2	7	3.04	+1.04	Gold Beach	15.97	Unity	.13
Pennsylvania	50.8	+2.1	2 stations	89	26	Kane	15	[1] 4	5.55	+2.10	Carrolltowne	10.10	Maple Glen	2.77
South Carolina	65.6	+3.1	Saluda	96	13	Walhalla	31	3	3.10	−1.18	Yemassee	8.33	Cleveland	.69
South Dakota	49.8	+3.8	Wood	93	17	Pine Ridge	2	7	2.60	+.54	Bowdle	5.54	Aberdeen	.66
Tennessee	63.0	+4.2	3 stations	90	[1] 24	Greenville	27	3	2.85	−1.52	Waynesboro	6.65	Red Boiling Springs	1.09
Texas	70.5	+4.4	Eagle Pass	105	11	Muleshoe	18	1	1.92	−.99	Burnett	6.55	2 stations	.00
Utah	46.9	−.2	Piute Dam	90	4	Silver Lake	−3	7	1.43	+.17	Alta	8.67	2 stations	.00
Virginia	57.2	+2.5	Danville	93	25	Balcony Falls	19	10	4.30	+1.02	Montebello	7.68	Emory	1.66
Washington	44.5	−3.8	Northport	82	21	Bumping Lake	8	8	3.34	+1.08	Mount Baker Lodge	12.48	White Swan	.20
West Virginia	56.8	+4.8	2 stations	94	26	2 stations	12	4	5.89	+2.36	Cairo	9.92	McNeill	2.92
Wisconsin	48.4	+4.6	3 stations	85	[1] 18	Land O'Lakes	5	3	2.47	−.05	Madeline Island	4.75	West Bend	1.28
Wyoming	43.3	+2.8	Basin	93	29	Kendall	−13	7	1.24	−.37	Sheridan Airport	4.53	Pathfinder Dam	.11
Alaska (March)	11.0	−2.5	Tree Point	55	31	Allakaket	−52	[1] 3	1.65	−.19	Little Port Walter	14.27	Wainwright	T
Hawaii	70.1	+.2	Hilo	89	25	Haleakala R. S.	38	[1] 3	8.78	+.73	Keanae	52.94	Hualalei	.00
Puerto Rico	74.7	.0	Dorado (2)	95	29	Garzas	50	3	2.28	−1.51	Mameyes (Utuado)	7.14	Josefa	.05

[1] Other dates also.

CLIMATOLOGICAL DATA FOR WEATHER BUREAU STATIONS FOR APRIL 1948

District and station	Elevation of instruments: Barometer above sea level	Elevation of instruments: Thermometer above ground	Elevation of instruments: Anemometer above ground	Pressure: Station	Pressure: Sea level	Pressure: Departure from normal	Temperature of the air: Averages: Mean maximum	Temperature of the air: Averages: Mean minimum	Temperature of the air: Averages: Mean	Temperature of the air: Averages: Departure from normal	Temperature of the air: Extremes: Highest	Temperature of the air: Extremes: Date	Temperature of the air: Extremes: Lowest	Temperature of the air: Extremes: Date	Temperature of the air: Extremes: Greatest daily range	Total heating degree days	Mean temperature of the dew point	Mean relative humidity	Precipitation: Total	Precipitation: Departure from normal	Precipitation: Greatest in 24 hours	Precipitation: Days with 0.01 inch or more	Precipitation: Days with thunderstorms	Precipitation: Total snowfall (unmelted)	Precipitation: Snow, sleet, and ice on ground at end of month	Wind: Average hourly speed	Wind: Prevailing direction	Wind: Maximum velocity: Miles per hour	Wind: Maximum velocity: Direction	Wind: Maximum velocity: Date	Character of day (sunrise to sunset), number of days: Clear	Character of day (sunrise to sunset), number of days: Partly cloudy	Character of day (sunrise to sunset), number of days: Cloudy	Average cloudiness, tenths (sunrise to sunset)	Possible sunshine
	Ft.	*Ft.*	*Ft.*	*Mb.*	*Mb.*	*Mb.*	°F.	°F.	°F.	°F.	°F.		°F.		°F.		°F.	%	*In.*	*In.*	*In.*			*In.*	*In.*	m. p. h.					*0-3*	*4-7*	*8-10*	*0-10*	%
NEW ENGLAND									43.8	+0.9						70			3.40	+0.3															6.5	
Caribou [2]	628	5	33	993.6	1,017.3	----	44	27	35.6	.0	55	24	15	4	30	883	25	67	2.30	−.5	.96	14	1	3.6	0.0	----	n.	46	nw.	4	4	8	18	7.4	----
Eastport	75	67	82	1,014.6	1,017.6	+3.7	44	32	37.9	−1.1	52	23	22	4	20	812	29	72	2.86	.0	.92	15	1	8.9	.0	11.7	s.	34	e.	15	7	4	19	6.8	----
Portland, Maine [2]	103	6	43	1,013.9	1,018.0	+3.1	51	32	41.4	+1.3	64	24	17	11	31	707	32	71	2.90	−.5	1.04	11	0	T	.0	10.3	s.	33	s.	1	8	8	14	6.0	----
Concord [2]	289	5	45	1,007.5	1,018.0	+3.1	57	31	43.8	+2.2	76	20	16	11	47	635	32	66	3.41	+.6	1.31	11	1	.2	.0	8.2	nw.	34	nw.	17	8	6	16	6.4	----
Mt. Washington	6,274	5	37	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Burlington [2]	403	6	51	1,002.4	1,017.6	+2.7	56	32	44.0	+.7	72	24	20	11	40	635	33	67	2.94	+.8	1.11	12	1	T	.0	11.2	nw.	46	s.	11	6	7	17	6.8	----
Boston [2]	124	33	62	1,013.9	1,018.5	+3.6	56	39	48.0	+1.6	74	24	30	10	30	511	32	60	2.62	−.7	.77	10	0	.0	.0	13.0	sw.	34	nw.	3	8	6	16	6.4	----
Nantucket [2]	12	4	34	1,018.6	1,019.0	+4.4	50	37	43.6	−.2	55	21	27	11	22	643	36	78	2.71	−.2	1.11	10	0	.0	.0	15.7	sw.	36	w.	30	8	11	11	5.8	----
Block Island	26	11	46	1,017.6	1,018.6	+3.7	50	38	44.2	+.2	60	21	32	10	19	623	38	85	4.65	+1.1	2.06	8	0	T	.0	16.5	sw.	41	nw.	3	8	5	17	6.4	----
Providence [2]	159	65	60	1,012.9	1,019.0	+3.8	59	40	49.6	+3.0	77	6	30	10	32	461	32	63	3.71	+.5	1.59	10	1	T	.0	10.1	sw.	36	nw.	9	8	6	16	6.2	----
Hartford [2]	159	5	44	1,013.2	1,019.0	+3.8	59	37	47.8	+1.1	71	21	25	11	37	515	35	68	3.85	+.5	1.46	11	2	T	.0	10.3	s.	33	nw.	9	8	6	16	6.4	----
New Haven [2]	107	5	39	1,015.2	1,019.3	+3.7	55	37	46.2	+1.3	71	21	26	11	32	566	36	71	5.45	+2.2	2.81	11	2	T	.0	8.3	sw.	24	se.	7	7	5	18	6.6	----
MIDDLE ATLANTIC									53.2	+1.6																							6.4	
Albany [2]	97	6	40	1,014.2	1,018.0	+2.4	58	35	46.9	+2.5	76	20	21	18	41	543	34	69	3.50	+.4															6.5	
New York [4]	314	415	454	1,008.1	1,019.6	+4.0	58	42	50.0	+.6	74	20	30	10	26	449	37	62	2.87	+.7	1.20	13	3	T	.0	11.6	w.	38	w.	9	8	5	17	6.5	----
Harrisburg [2]	374	30	49	1,005.4	1,019.0	+3.1	62	42	52.2	+1.3	83	20	28	18	32	387	38	66	3.38	+.2	1.48	11	0	.0	.0	14.9	nw.	54	nw.	30	6	7	17	6.8	----
Philadelphia [4]	114	174	150	1,015.2	1,019.3	+3.0	61	44	52.3	+1.3	83	20	32	18	32	387	38	65	3.97	+1.3	1.16	15	3	T	.0	8.8	se.	42	w.	9	5	8	18	7.4	----
Reading	323	47	306	1,014.5	1,019.6	+3.7	61	44	52.4	+.3	78	20	34	10	28	380	40	68	3.54	+.5	1.56	12	1	.0	.0	8.9	s.	25	nw.	17	7	8	15	6.5	----
Scranton	805	72	104	989.2	1,018.6	+3.7	62	43	52.3	+1.5	81	20	32	18	30	385	----	----	3.56	+.3	1.03	13	1	.0	.0	12.2	nw.	38	w.	9	7	1	22	7.2	----
Atlantic City	52	57	172	1,017.6	1,019.6	+3.7	56	42	49.0	+1.2	74	12	32	10	28	480	41	73	3.13	+.1	1.52	10	1	.0	.0	16.8	ne.	45	se.	1	4	7	19	7.2	----
Newark [2]	30	5	46	1,018.3	1,019.3	----	59	41	50.3	+.1	78	20	32	10	34	438	38	64	3.33	−.4	1.62	12	0	.0	.0	----	sw.	37	w.	30	7	5	18	6.6	----
Trenton	190	89	107	1,012.2	1,019.3	+3.7	60	42	51.3	+1.5	78	20	32	10	29	409	----	----	2.68	−.3	1.31	11	0	T	.0	10.4	s.	31	nw.	17	6	8	16	6.5	----
Baltimore [4]	123	100	215	1,015.2	1,019.6	+3.7	64	46	55.0	+1.4	84	20	36	4	31	308	42	68	2.92	−.4	1.08	11	4	.0	.0	11.4	s.	45	nw.	9	9	9	12	5.9	----
Washington [4]	112	56	100	1,015.9	1,020.0	+4.1	67	46	56.8	+3.5	85	20	34	4	32	265	42	64	2.44	−.8	1.33	9	3	.0	.0	8.8	s.	33	nw.	9	6	11	13	6.4	----
Cape Henry	18	8	54	1,018.6	1,019.3	+3.0	65	49	57.0	+2.4	88	12	43	4	32	256	48	78	3.73	+.4	1.23	12	7	.0	.0	12.7	ne.	38	n.	17	9	8	13	5.9	----
Lynchburg [2]	686	5	58	994.2	1,019.3	+3.0	69	47	58.0	+2.4	88	25	32	4	38	236	46	70	2.84	−.1	.71	6	0	.0	.0	9.2	sw.	27	sw.	5	9	7	14	5.6	----
Norfolk [4]	91	80	125	1,016.6	1,020.0	+3.4	68	50	58.8	+2.0	86	12	43	5	34	216	48	76	4.86	+1.6	1.34	13	7	.0	.0	10.3	ne.	40	nw.	21	9	5	16	6.1	----
Richmond [4]	144	11	52	1,013.5	1,019.0	+2.7	69	47	58.3	+1.7	89	25	37	4	40	227	46	72	4.60	+1.1	1.20	13	8	.0	.0	8.2	ne.	30	sw.	12	9	8	13	5.7	----
SOUTH ATLANTIC									65.2	4.0																							4.9	
Asheville	2,253	77	92	945.8	1,019.6	+3.0	72	49	60.3	+6.4	84	25	35	4	37	170	45	66	1.34	−1.7	.71	6	3	.0	.0	9.7	se.	26	nw.	28	10	12	8	5.1	----
Charlotte [4]	779	63	86	991.5	1,019.6	+3.0	74	54	64.2	+4.4	89	25	42	18	30	98	49	64	1.46	−1.8	.53	6	6	.0	.0	7.3	sw.	22	w.	8	12	9	9	5.1	----
Greensboro [2]	886	6	56	987.8	1,019.6	+2.7	73	48	60.8	+4.5	89	25	35	18	39	174	48	67	2.28	−1.3	.99	8	5	.0	.0	8.6	sw.	28	sw.	12	11	10	9	5.1	----
Hatteras	11	5	47	1,019.3	1,019.3	+3.0	68	56	62.1	+2.3	81	25	47	29	19	133	55	79	1.84	−1.7	.68	8	4	.0	.0	14.2	sw.	34	ne.	17	9	7	14	6.0	----
Raleigh [4]	376	5	71	1,005.4	1,019.0	+2.7	75	51	63.0	+3.6	91	25	36	18	36	138	49	68	2.35	−1.1	1.21	10	4	.0	.0	7.5	sw.	24	sw.	12	13	11	6	4.3	----
Wilmington	72	73	107	1,018.6	1,020.0	+3.1	74	56	64.7	+2.7	89	25	43	18	30	88	54	73	2.42	−.2	1.12	9	5	.0	.0	10.4	sw.	34	s.	11	14	10	6	4.5	----
Charleston [4]	48	11	92	1,018.0	1,019.6	+2.7	75	60	67.6	+3.1	85	8	48	18	20	36	56	74	4.86	+2.3	3.26	6	3	.0	.0	11.1	s.	28	e.	17	14	9	7	4.5	----
Columbia, S. C. [4]	347	70	91	1,006.8	1,019.3	+2.4	78	56	66.8	+3.5	88	25	43	3	30	45	53	67	1.35	−1.5	1.14	10	3	.0	.0	8.6	s.	26	sw.	11	14	6	10	4.7	----
Greenville, S. C. [4]	1,040	18	36	982.1	1,019.3	+2.7	74	53	63.6	+5.0	87	27	42	10	32	91	49	63	1.83	−1.9	1.21	7	2	.0	.0	9.0	sw.	31	n.	9	11	10	9	5.0	----
Augusta [4]	182	62	77	1,012.5	1,019.0	+2.7	79	58	68.2	+4.0	89	27	43	4	32	23	52	62	2.58	−.6	1.48	6	2	.0	.0	5.9	s.	32	nw.	8	12	10	8	4.9	----
Savannah [2]	65	19	51	1,017.3	1,019.6	+2.7	78	59	68.6	+4.3	88	28	50	3	33	19	58	74	5.32	+2.8	4.23	8	3	.0	.0	10.6	s.	47	w.	1	12	12	6	4.6	----
Jacksonville [4]	43	86	110	1,017.6	1,019.3	+2.0	80	64	72.4	+3.7	89	8	56	30	25	3	61	72	2.87	+.5	2.33	4	2	.0	.0	9.2	ne.	38	sw.	1	8	17	5	4.9	----
FLORIDA PENINSULA									75.2	+1.8																							4.8	
Key West [4]	21	10	64	1,015.9	1,016.9	+1.0	83	73	77.8	+2.1	87	2	66	4	17	0	68	74	12.83	+11.5	4.22	10	3	.0	.0	11.4	e.	25	nw.	29	10	13	7	5.1	----
Miami [4]	25	242	249	1,016.3	1,017.3	+.4	78	70	73.9	+.3	86	28	62	30	21	0	65	73	4.34	+.9	2.25	12	2	.0	.0	16.1	e.	35	se.	27	6	17	7	5.5	----
Tampa [2]	35	5	36	1,016.9	1,018.3	+1.4	84	64	74.0	+3.1	90	9	60	20	24	0	63	74	4.28	+2.3	1.61	5	5	.0	.0	8.2	e.	30	s.	1	18	7	5	3.9	----
EAST GULF									69.0	+4.3																							4.8	
Atlanta [2]	1,173	33	72	977.7	1,018.6	+2.0	76	55	65.6	+4.5	85	12	42	3	31	75	51	70	3.71	−.6														4.8	
Macon [4]	370	79	87	1,005.8	1,019.0	+2.4	79	57	67.6	+3.7	88	27	44	3	34	31	64	64	2.82	−.9	1.66	7	3	.0	.0	10.0	nw.	28	nw.	28	12	10	8	4.8	----
Apalachicola	35	11	51	1,017.3	1,018.6	+1.7	79	65	71.8	+4.7	90	28	52	3	22	3	63	64	3.02	−.1	1.63	8	5	.0	.0	6.8	n.	23	nw.	28	11	12	7	4.8	----
Pensacola [4]	56	54	79	1,017.1	1,018.6	+2.0	77	58	67.8	+4.7	88	27	48	3	32	3	63	77	1.92	−.9	.96	5	3	.0	.0	9.1	se.	25	se.	6	17	7	6	3.9	----
Tallahassee [4]	56	54	79	1,016.6	1,018.6	+1.7	78	64	71.4	+4.7	90	28	54	2	28	4	60	72	5.66	+1.6	3.82	6	5	.0	.0	9.0	se.	29	nw.	1	14	8	8	4.7	----
Anniston	618	6	32	1,000.4	1,019.3	+2.4	78	53	65.6	+4.4	87	25	38	3	37	74	54	71	3.50	−.9	1.95	8	4	.0	.0	----	e.	----	----	----	----	----	----	----	----
Birmingham [2]	700	5	63	994.2	1,019.0	+2.1	78	54	66.0	+4.3	86	27	38	3	36	69	53	67	3.55	−1.3	1.32	8	6	.0	.0	9.1	se.	36	se.	13	11	8	11	5.2	----
Mobile [4]	57	86	161	1,016.6	1,018.6	+2.0	80	62	70.8	+4.5	88	28	49	15	29	12	60	74	4.31	−.3	1.14	7	5	.0	.0	8.8	se.	28	w.	13	12	8	10	4.8	----
Montgomery [4]	218	92	105	1,010.8	1,018.3	+1.4	80	59	69.6	+4.3	88	7	47	3	28	22	56	68	1.88	−2.4	.51	7	4	.0	.0	7.6	n.	23	n.	8	14	10	6	4.5	----
Meridian [4]	375	67	92	1,005.1	1,018.6	+2.3	79	57	68.0	+4.0	87	21	42	15	36	42	56	72	6.88	+2.1	2.86	8	5	.0	.0	6.6	s.	23	sw.	11	9	12	9	4.9	----
Vicksburg [4]	247	82	102	1,009.1	1,018.0	+1.7	80	60	69.6	+4.0	88	12	45	2	27	33	56	74	5.30	+.1	2.66	8	5	.0	.0	9.0	s.	27	n.	8	11	4	15	5.5	----
New Orleans C. O.	53	76	84	1,016.3	1,018.3	+2.0	82	65	73.3	+4.5	90	28	53	15	23	7	61	72	2.02	−3.2	1.13	5	2	.0	.0	7.2	se.	28	nw.	13	11	9	10	5.2	----
WEST GULF									71.3	+4.3																							5.0	
Shreveport [2]	181	5	64	1,007.8	1,016.6	+1.4	82	59	70.4	+4.5	92	7	42	2	34	25	57	71	1.94	−1.8														5.0	
Fort Smith [2]	463	6	30	998.6	1,014.9	+1.0	81	53	66.8	+5.0	91	7	37	2	41	60	50	70	2.80	−1.8	1.52	5	5	.0	.0	10.0	s.	34	sw.	23	10	11	9	5.1	----
Little Rock [2]	265	26	58	1,004.4	1,016.9	+2.0	79	56	67.5	+5.4	89	27	42	2	34	59	54	62	1.67	−2.3	.99	5	8	.0	.0	8.7	ne.	31	sw.	11	8	10	11	5.1	----
Austin [2]	621	5	41	993.6	1,015.2	+1.7	85	58	71.6	+3.8	92	11	43	1	39	28	56	67	4.54	−.6	2.53	7	6	.0	.0	9.2	s.	34	sw.	12	13	10	7	4.7	----
Brownsville [2]	20	5	54	1,011.9	1,013.9	+1.4	86	65	75.4	+1.7	94	13	50	2	37	2	64	68	1.68	−2.7	1.20	4	4	.0	.0	11.5	s.	33	s.	24	9	12	9	5.0	----
Corpus Christi [2]	44	6	33	1,014.6	1,015.2	+1.7	83	63	73.0	+4.0	87	27	52	17	29	2	64	77	.02	−1.7	.02	1	0	.0	.0	13.9	se.	34	nw.	1	5	10	6	5.5	----
Dallas [2]	488	34	45	996.3	1,014.6	+.7	83	59	71.0	+5.9	96	11	40	14	36	32	54	62	1.10	−3.2	1.01	3	3	.0	.0	14.5	s	36	s.	19	11	12	7	4.9	----
Fort Worth [2]	706	40	56	990.5	1,014.6	+1.1	83	59	71.0	+6.9	96	11	40	14	35	34	52	59	1.11	−2.9	.92	4	3	.0	.0	14.5	s.	36	s.	24	10	12	8	5.1	----
Galveston [4]	54	122	129	1,014.9	1,016.9	+1.7	77	68	72.0	+3.3	84	28	54	1	19	7	64	82	.78	−2.3	.56	3	2	.0	.0	12.8	se.	35	w.	1	13	8	9	4.8	----
Houston [4]	138	157	190	1,011.5	1,016.6	+1.7	82	64	72.7	+3.4	92	28	50	1	29	8	62	80	1.59	−2.0	.75	7	4	.0	.0	11.7	s.	34	se.	10	11	10	9	5.3	----
Palestine	510	64	72	998.3	1,016.3	+1.4	81	60	70.6	+4.6	90	8	47	14	30	30	55	64	4.20	−.2	1.75	6	5	.0	.0	8.7	s.	24	s.	12	10	10	10	5.4	----
Port Arthur [4]	34	59	134	1,015.6	1,016.9	+1.7	80	66	72.5	+4.0	91	28	55	2	25	4	62	80	3.16	+.2	2.00	5	4	.0	.0	13.7	s.	34	nw.	1	13	7	10	4.6	----
San Antonio [2]	794	6	51	990.2	1,014.6	+1.4	87	58	72.8	+3.7	98	7	43	2	41	20	56	64	1.40	−1.8	.90	4	1	.0	.0	10.6	s.	27	se.	24	11	9	10	5.0	----
OHIO VALLEY AND TENNESSEE									58.7	+4.9																							6.2	
Chattanooga [2]	762	6	66	991.5	1,019.0	+2.4	77	52	64.6	+7.0	88	27	36	4	37	86	51	67	4.02	−.8	1.69	8	5	.0	.0	8.8	s.	36	sw.	12	13	7	10	5.2	----
Knoxville [2]	995	27	71	983.4	1,019.3	+3.0	75	52	63.5	+6.2	86	26	38	3	37	105	49	62	2.67	−1.5	1.03	10	6	.0	.0	8.8	sw.	42	sw.	8	12	10	8	5.0	----
Memphis [4]	399	5	49	1,003.4	1,017.6	+1.7	77	55	65.8	+4.0	86	27	36	2	35	92	53	66	3.59	−1.2	1.36	9	5	.0	.0	8.7	s.	30	s.	11	10	10	10	5.2	----

See footnotes at end of table.

CLIMATOLOGICAL DATA FOR WEATHER BUREAU STATIONS FOR APRIL 1948—Continued

District and station	Elevation of instruments: Barometer above sea level [1]	Elevation of instruments: Thermometer above ground	Elevation of instruments: Anemometer above ground	Pressure: Station	Pressure: Sea level	Pressure: Departure from normal	Temperature of the air: Averages: Mean maximum °F.	Temperature of the air: Averages: Mean minimum °F.	Temperature of the air: Averages: Mean	Temperature of the air: Averages: Departure from normal	Temperature of the air: Extremes: Highest °F.	Temperature of the air: Extremes: Date	Temperature of the air: Extremes: Lowest	Temperature of the air: Extremes: Date	Temperature of the air: Extremes: Greatest daily range °F.	Total heating degree days	Mean temperature of the dew point	Mean relative humidity	Precipitation: Total	Precipitation: Departure from normal	Precipitation: Greatest in 24 hours	Precipitation: Days with 0.01 inch or more	Precipitation: Days with thunderstorms	Precipitation: Total snowfall (unmelted)	Precipitation: Snow, sleet, and ice on ground at end of month	Wind: Maximum velocity: Average hourly speed	Wind: Prevailing direction	Wind: Maximum velocity: Miles per hour	Wind: Maximum velocity: Direction	Wind: Maximum velocity: Date	Character of day (sunrise to sunset), number of days: Clear	Character of day (sunrise to sunset), number of days: Partly cloudy	Character of day (sunrise to sunset), number of days: Cloudy	Average cloudiness, tenths (sunrise to sunset)	Possible sunshine
OHIO VALLEY AND TENNESSEE—Continued	*Ft.*	*Ft.*	*Ft.*	*Mb.*	*Mb.*	*Mb.*			°F.	°F.			°F.				°F.	%	*In.*	*In.*	*In.*			*In.*	*In.*	m. p. h.					0–3	4–7	8–10	0–10	%
Nashville [2]	546	5	72	998.6	1,018.6	+2.0	76	52	63.7	+4.7	86	27	34	2	38	126	51	66	1.15	−3.0	.63	13	3	.0	.0	10.4	s.	38	sw.	7	10	11	9	5.2	
Lexington [3]	989	4	58	983.1	1,019.6	+3.0	69	47	57.8	+3.5	85	26	32	3	36	253	47	71	7.50	+4.0	4.39	12	7	.0	.0	---	s.	---	---	---	6	11	13	6.0	
Louisville [3]	525	5	54	1,000.7	1,018.6	+2.3	71	48	59.8	+5.0	87	25	31	3	40	210	46	64	6.39	+2.5	3.31	9	6	.0	.0	9.1	s.	34	s.	11	5	12	13	6.5	
Evansville [3]	431	6	40	1,004.1	1,018.0	+2.1	70	46	58.2	+3.3	85	25	30	2	39	257	48	70	3.98	+.1	2.46	6	7	.0	.0	9.5	nw.	31	se.	7	5	12	13	6.6	
Indianapolis [3]	823	5	54	988.5	1,018.0	+2.1	65	43	54.0	+3.2	85	25	28	3	39	352	43	70	3.44	---	1.44	9	6	.0	.0	12.3	sw.	42	sw.	11	5	9	16	7.0	
Terre Haute [3]	575	4	36	996.6	1,018.3	+3.1	67	44	55.5	+3.0	82	25	28	3	37	303	46	71	1.90	−1.8	1.06	6	7	.0	.0	11.9	s.	39	s.	11	4	10	16	7.1	
Cincinnati [4]	627	135	148	986.8	1,018.6	+2.3	70	49	59.2	+6.8	88	26	35	3	34	224	45	70	5.32	+2.2	2.60	7	4	.0	.0	5.4	nw.	19	nw	2	8	9	13	6.1	
Columbus [4]	822	90	110	988.2	1,018.3	+2.4	66	46	56.0	+4.8	89	26	32	3	36	306	44	69	4.39	+1.5	1.43	12	5	.0	.0	10.2	s.	32	w.	27	5	11	14	6.4	
Dayton [3]	1,003	6	55	982.1	1,018.6	+2.7	64	44	54.0	+3.5	84	26	29	3	34	350	44	71	3.87	+.7	1.22	12	8	.0	.0	12.7	nw.	39	w.	8	5	10	15	6.7	
Elkins [3]	1,947	5	45	949.5	1,019.0	+2.1	67	42	54.6	+7.2	84	26	22	4	50	314	42	70	5.41	+1.8	1.53	15	6	T	.0	8.3	nw.	40	nw.	27	4	9	17	6.9	
Parkersburg	637	77	84	995.3	1,018.6	+2.0	70	47	58.5	+5.1	91	26	29	10	41	232	44	64	6.75	+3.6	3.20	13	7	.0	.0	7.1	nw.	30	nw.	8	4	14	12	6.5	
Pittsburgh [3]	842	39	54	967.5	1,018.3	+1.7	66	44	54.7	+5.5	85	26	28	4	40	339	41	67	6.03	+3.1	1.72	15	4	T	.0	11.0	nw.	37	nw.	27	3	11	16	7.0	
LOWER LAKES									49.9	+5.0								68	3.13	+.6														6.7	
Buffalo [3]	768	34	98	989.8	1,018.3	+2.7	59	39	48.8	+5.0	80	26	23	10	38	487	37	68	2.81	+.2	.63	16	5	T	.0	14.1	sw.	49	s.	11	3	11	16	7.1	
Canton	448	10	61	1,001.0	1,017.3	+2.7	55	34	44.5	+2.6	73	20	20	10	33	617	31	62	3.52	+1.3	.94	12	2	T	.0	10.2	w.	31	sw.	11	6	8	16	6.7	
Oswego	335	71	85	1,005.1	1,017.6	+2.4	55	39	47.0	+4.4	77	20	28	3	31	540	34	66	2.79	+.4	.58	14	3	.3	.0	10.4	w.	28	se.	11	6	12	12	6.4	
Rochester [3]	523	4	69	999.0	1,018.3	+2.4	60	38	49.0	+5.5	81	20	22	4	41	488	37	70	3.26	+.9	.71	19	5	.3	.0	11.4	s.	45	w.	8	4	11	15	6.9	
Syracuse [3]	596	5	57	996.3	1,018.3	+2.7	60	37	48.6	+5.6	81	20	22	18	40	495	36	67	4.10	+1.6	.83	16	2	.6	.0	11.9	w.	45	s.	11	4	8	18	7.0	
Erie [4]	714	57	81	991.9	1,018.3	+2.7	58	43	50.3	+5.2	80	20	29	4	31	444	40	74	5.19	+2.5	1.88	18	5	T	.0	9.8	w.	26	se.	11	5	11	14	6.4	
Cleveland [3]	762	27	54	988.5	1,018.0	+2.4	63	42	52.6	+6.4	87	26	26	10	38	398	41	68	3.24	+.8	1.43	13	5	.3	.0	11.8	s.	53	w.	8	4	9	17	7.1	
Sandusky	629	5	67	994.9	1,018.3	+1.7	62	43	52.6	+5.4	83	24	29	10	37	390	---	---	2.68	+.1	.98	13	6	T	.0	10.6	e.	34	w.	9	8	9	13	6.1	
Toledo [3]	628	5	47	994.6	1,018.0	+2.1	63	41	52.0	+5.8	85	25	25	10	37	406	42	70	2.59	−.1	.96	13	5	T	.0	13.2	nw.	42	sw.	20	7	6	17	6.6	
Fort Wayne [3]	857	5	34	987.5	1,018.0	+2.1	63	41	52.2	+3.5	85	26	28	3	40	406	42	72	1.61	−1.5	.63	11	7	T	.0	11.1	s.	40	s.	11	3	12	15	7.0	
Detroit [3]	730	5	77	995.3	1,018.3	+2.4	62	41	51.2	+5.6	83	25	28	10	34	426	39	66	2.64	+.2	.79	10	7	T	.0	11.2	nw.	39	w.	8	7	8	15	6.8	
UPPER LAKES									45.7	+4.4								71	2.58	+.1														6.6	
Alpena	609	5	89	994.9	1,018.0	+2.1	50	34	41.9	+3.3	62	30	23	10	31	693	34	77	2.01	−.2	.52	12	6	T	.0	11.5	se.	32	se.	17	8	7	15	6.4	
Escanaba	612	51	72	993.9	1,017.3	+1.0	48	33	40.7	+2.8	60	26	21	3	23	730	33	76	1.43	−.8	.55	11	3	T	.0	10.3	s.	34	n.	16	7	13	10	5.9	
Grand Rapids [4]	707	70	244	991.9	1,017.3	+1.4	62	42	51.8	+4.8	85	25	28	9	31	422	39	69	3.79	+1.0	1.27	13	4	T	.0	12.5	se.	35	sw.	20	4	11	15	6.8	
Lansing [4]	878	5	90	985.4	1,017.6	+2.0	61	40	50.4	+4.8	82	26	26	9	38	453	38	65	2.52	−.1	.88	13	7	.3	.0	9.9	s.	26	sw.	8	5	11	14	6.7	
Marquette	734	44	73	988.8	1,016.6	.0	52	34	42.8	+5.0	78	26	20	9	37	667	32	70	2.25	−.1	.62	14	5	5.3	.0	10.1	s.	37	s.	10	5	12	13	6.3	
Sault Sainte Marie [3]	614	10	52	990.2	1,017.3	+1.0	50	30	40.0	+3.5	65	22	15	9	34	749	32	76	2.81	+.7	.54	13	4	.4	.0	12.5	se.	35	w.	8	5	9	16	6.8	
Chicago [3]	673	5	38	994.2	1,017.3	+1.4	63	43	53.1	+6.2	85	25	29	3	34	386	41	65	1.44	−1.1	.44	11	5	T	.0	12.2	s.	34	w.	8	3	10	17	7.1	
Green Bay	617	5	32	993.6	1,016.3	+1.1	57	36	46.6	+3.4	80	25	23	17	34	554	36	68	2.93	+.3	.71	15	9	T	.0	9.2	se.	29	sw.	11	3	10	17	7.1	
Milwaukee [3]	681	33	66	991.2	1,016.9	+1.3	8	39	48.8	+6.6	78	24	28	3	33	494	39	70	1.91	−.8	.76	10	6	T	.0	14.8	s.	39	w.	8	3	10	17	7.2	
Duluth [4]	1,133	5	47	963.4	1,015.9	.0	50	32	41.0	+4.0	69	21	17	9	30	720	32	73	4.57	+2.5	1.74	14	4	.7	.0	13.0	ne.	38	w.	11	11	6	13	5.9	
NORTH DAKOTA									41.8	+1.3								72	2.68	+1.1														6.4	
Fargo [3]	940	5	47	981.4	1,014.9	+2.4	54	34	44.2	+3.6	76	17	8	2	37	621	36	75	2.44	+.3	1.18	10	4	1.2	.0	14.6	n.	39	n.	8	7	8	15	6.3	
Bismarck [3]	1,677	5	41	952.9	1,013.2	−2.4	56	32	44.2	+3.8	84	17	10	2	46	624	34	71	3.05	+1.5	1.54	9	1	.8	.0	13.3	e.	36	e.	29	3	14	13	6.7	
Devils Lake	1,478	11	44	960.4	1,015.2	−.7	46	28	36.9	−1.9	70	21	2	2	31	841	31	77	2.80	+1.3	1.01	8	2	9.6	.0	10.9	se.	28	nw.	10	6	12	12	6.1	
Williston	1,878	42	50	944.8	1,012.5	−2.7	54	30	41.8	−.2	77	22	3	8	45	694	30	67	2.45	+1.2	1.24	4	4	7.5	.0	9.0	e.	34	e.	30	6	10	14	6.5	
UPPER MISSISSIPPI									55.0	+5.2								63	2.15	−.5														6.2	
Minneapolis-St. Paul [3]	919	43	74	983.7	1,014.6	+.4	61	39	50.0	+3.6	78	18	22	9	33	454	36	62	1.77	−.5	.88	9	2	.3	.0	13.8	se.	38	nw.	8	5	11	14	6.5	
La Crosse [3]	672	5	29	990.5	1,015.2	+.3	63	38	50.5	+4.9	82	18	22	3	41	444	38	64	2.03	−.4	.56	10	7	T	.0	11.7	s.	35	w.	7	5	9	16	6.7	
Madison [3]	974	27	39	984.8	1,016.6	+1.0	63	39	50.9	+5.5	82	25	24	3	35	431	38	66	2.97	+.2	.84	9	5	T	.0	13.0	s.	38	w.	8	4	11	15	7.0	
Charles City	1,015	10	51	978.7	1,016.3	+1.1	64	40	52.0	+5.6	87	18	25	9	38	400	---	---	3.03	+.5	1.08	10	4	T	.0	8.8	s.	25	s.	10	9	12	9	5.0	
Moline [3]	606	6	50	994.9	1,016.9	+1.7	66	45	55.2	+6.4	86	25	28	3	34	328	40	59	1.67	−1.0	.55	11	5	.0	.0	13.2	s.	40	sw.	11	5	11	14	6.2	
Des Moines [4]	860	5	99	---	1,015.6	+1.0	69	45	56.0	+5.9	87	18	28	2	36	296	41	62	1.87	−1.0	.97	8	5	.0	.0	12.4	se.	34	sw.	18	5	13	12	6.3	
Dubuque	699	60	79	990.9	1,015.9	+.7	64	44	54.3	+5.7	84	25	29	9	35	336	41	63	2.98	+.1	.97	11	6	T	.0	7.5	s.	21	nw.	8	5	12	13	6.0	
Burlington [3]	702	4	36	990.9	1,016.6	+1.4	67	45	55.7	+4.3	84	18	27	9	34	310	43	65	1.95	−1.2	.56	10	7	.0	.0	13.2	nw.	35	nw.	8	6	11	13	6.2	
Cairo	357	5	99	1,004.7	1,017.6	+2.7	74	54	64.0	+4.9	86	27	40	2	32	123	---	---	2.19	−1.5	1.59	7	4	.0	.0	10.8	s.	29	s.	11	8	12	10	5.5	
Peoria [3]	609	7	26	992.9	1,016.9	+1.3	65	45	55.0	+5.1	85	24	31	9	32	330	42	63	1.81	−1.6	.97	8	3	.0	.0	12.3	s.	31	w.	8	9	6	15	6.1	
Springfield, Ill. [4]	636	5	191	994.6	1,016.9	+2.0	67	46	56.5	+6.2	84	25	32	9	30	295	44	64	1.29	−2.2	.44	6	5	.0	.0	14.7	s.	34	s.	10	8	11	11	5.8	
St. Louis [4]	568	33	59	996.6	1,016.9	+1.7	70	50	60.1	+4.0	88	7	38	1	33	204	---	60	2.21	−1.6	1.09	9	6	.0	.0	14.5	s.	44	s.	19	10	9	11	---	
MISSOURI VALLEY									58.2	+6.3								61	1.75	−1.2														6.1	
Columbia, Mo. [4]	784	6	66	987.5	1,015.9	+1.3	72	50	61.0	+6.2	87	18	32	1	34	180	43	60	.82	−3.0	.55	6	7	.0	.0	9.2	s.	24	sw.	19	12	10	8	5.0	
Kansas City [3]	963	38	76	980.4	1,015.2	−.6	73	51	61.8	+7.0	87	18	31	1	37	149	42	54	.80	−2.7	.63	5	1	.0	.0	13.0	s.	37	sw.	18	5	12	13	6.5	
St. Joseph [3]	967	5	51	980.0	1,014.6	+.4	72	48	59.8	+6.3	88	18	27	1	41	196	44	62	1.63	−1.6	1.01	7	8	.0	.0	10.5	s.	30	nw.	26	7	10	13	6.2	
Springfield, Mo. [3]	1,324	5	50	968.5	1,013.9	−2.0	72	49	60.7	+5.5	85	18	33	14	36	165	44	60	1.22	−2.6	.34	8	7	.0	.0	14.2	s.	36	sw.	19	8	9	13	5.8	
Topeka [4]	987	65	87	979.0	1,014.2	+.3	74	50	62.0	+7.3	91	18	30	1	38	143	44	59	2.01	−.8	1.87	5	8	.0	.0	11.2	s.	29	sw.	23	4	13	13	6.6	
Lincoln [4]	1,189	6	81	970.5	1,013.5	−.7	69	46	57.9	+6.4	88	18	27	2	39	239	42	61	1.92	−.6	1.10	8	6	.0	.0	11.0	s.	32	s.	3	5	11	14	6.6	
Norfolk, Nebr. [3]	1,551	5	38	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Omaha [3]	1,105	5	68	974.3	1,014.2	−.4	69	45	57.0	+6.0	89	18	26	2	38	263	43	62	2.57	+.1	1.14	11	8	.0	.0	13.8	s.	44	s.	3	7	11	12	6.2	
Valentine	2,598	46	54	920.4	1,011.9	−2.7	66	38	52.2	+6.5	87	17	19	2	42	391	34	54	1.68	−.2	.76	10	6	.0	.0	11.3	s.	35	nw.	24	11	12	7	5.7	
Sioux City [3]	1,138	5	40	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Huron [3]	1,301	5	41	965.8	1,012.9	−2.3	64	38	51.0	+5.9	86	18	16	2	41	424	38	67	3.10	+.9	1.38	11	6	T	.0	15.7	se.	46	s.	3	4	12	14	6.6	
NORTHERN SLOPE									46.2	+2.1								58	1.26	−.1														7.0	
Billings [3]	3,570	16	39	886.6	1,010.5	−4.7	60	36	48.0	+2.0	84	29	19	8	41	511	31	54	.74	---	.41	9	3	.4	.0	10.4	sw.	38	n.	17	1	14	15	7.4	
Havre	2,507	11	67	922.5	1,010.2	−4.7	56	32	43.8	+.1	77	21	16	7	43	638	29	61	1.11	+.1	.50	11	2	5.8	.0	9.4	e.	38	e.	29	5	8	17	6.9	
Helena [3]	4,124	5	43	876.4	1,010.2	−4.7	56	31	43.2	−.3	77	29	20	7	45	653	28	60	.58	−.5	.23	7	4	2.0	.0	9.3	w.	37	s.	29	1	8	21	7.7	
Missoula [3]	3,263	4	32	897.7	1,012.5	−2.4	55	31	43.1	−.8	78	28	20	4	43	655	31	65	.65	−.2	.19	9	1	2.6	.0	6.9	nw.	40	w.	21	1	4	25	8.5	
Kalispell	2,973	48	56	907.2	1,010.8	−3.8	51	33	42.0	−1.6	73	29	20	12	38	689	32	68	1.92	+1.1	.54	16	0	10.5	.0	6.0	w.	29	sw.	29	0	8	22	7.9	
Miles City [3]	2,371	5	28	918.1	1,011.2	−4.7	62	34	48.0	---	82	29	9	8	43	515	32	60	1.09	---	.65	9	2	.7	.0	---	nw.	---	---	---	3	12	15	6.9	
Rapid City [3]	3,259	5	56	897.4	1,011.5	−4.1	64	34	48.8	+4.7	88	17	15	8	45	483	32	59	1.62	+.2	.68	12	5	.1	.0	15.9	nw.	50	nw.	7	6	8	16	6.5	
Cheyenne [3]	6,094	22	40	809.7	1,011.5	−2.0	59	31	44.8	+3.9	75	17	18	8	38	608	26	50	.73	−1.3	.66	4	4	1.6	.0	13.4	nw.	49	nw.	19	6	12	12	6.2	
Lander [3]	5,352	6	30	831.7	1,011.9	−2.0	57	31	44.0	+1.6	78	28	19	8	40	634	25	48	.78	−1.3	.46	4	0	T	.0	8.3	sw.	42	s.	29	8	14	8	5.6	
Sheridan [3]	3,790	5	38	879.8	1,011.2	−3.7	61	32	46.8	+3.5	85	29	16	8	46	553	30	57	4.53	+2.6	3.84	8	0	11.5	.0	10.4	nw.	45	s.	29	2	15	13	6.7	
North Platte [4]	2,821	11	51	913.0	1,011.5	−2.7	71	42	56.2	+7.6	92	18	26	8	44	274	35	52	.08	−2.0	.07	2	3	.0	.0	9.1	s.	26	s.	3	5	14	11	6.3	

See footnotes at end of table.

CLIMATOLOGICAL DATA FOR WEATHER BUREAU STATIONS FOR APRIL 1948—Continued

District and station	Elevation of instruments: Barometer above sea level [1]	Elevation of instruments: Thermometer above ground	Elevation of instruments: Anemometer above ground	Pressure: Station	Pressure: Sea level	Pressure: Departure from normal	Temperature of the air: Averages: Mean maximum	Mean minimum	Mean	Departure from normal	Extremes: Highest	Date	Lowest	Date	Greatest daily range	Total heating degree days	Mean temperature of the dew point	Mean relative humidity	Precipitation: Total	Departure from normal	Greatest in 24 hours	Days with 0.01 inch or more	Days with thunderstorms	Total snowfall (unmelted)	Snow, sleet, and ice on ground at end of month	Wind: Average hourly speed	Prevailing direction	Maximum velocity: Miles per hour	Direction	Date	Character of day (sunrise to sunset), number of days: Clear	Partly cloudy	Cloudy	Average cloudiness, tenths (sunrise to sunset)	Possible sunshine
MIDDLE SLOPE	*Ft.*	*Ft.*	*Ft.*	*Mb.*	*Mb.*	*Mb.*			°F.	°F.			°F.				°F.	%	*In.*	*In.*	*In.*			*In.*	*In.*	*m. p. h.*					*0–3*	*4–7*	*8–10*	*0–10*	%
									60.7	+6.6								51	1.30	−1.3															5.2	
Denver [4]	5,292	106	113	834.4	1,010.5	−2.0	66	40	53.2	+6.1	83	29	29	8	35	355	24	40	1.22	−.8	1.07	2	0	4.1	.0	8.3	s.	28	n.	24	10	14	6	4.9	----
Pueblo [3]	4,690	5	36	853.4	1,010.5	−1.4	71	38	54.8	+5.4	87	18	21	1	46	309	33	47	1.32	.0	.89	4	0	5.4	.0	9.5	nw.	44	w.	10	10	11	9	5.0	----
Concordia	1,392	50	58	963.8	1,013.2	−1.0	72	49	60.2	+6.7	88	18	31	1	38	181	41	53	.94	−1.4	.72	3	3	.0	.0	10.8	s.	35	sw.	3	10	14	6	4.9	----
Dodge City [3]	2,500	5	58	924.8	1,011.5	−2.0	74	47	60.3	+6.7	90	18	29	1	39	173	38	49	.50	−1.4	.46	3	1	.0	.0	18.5	s.	52	s.	3	7	16	7	5.4	----
Wichita [3]	1,358	52	64	965.1	1,013.2	.0	75	51	63.0	+6.6	89	30	32	1	35	120	42	52	1.65	−1.3	1.06	5	5	.0	.0	18.1	s.	47	s.	10	7	12	11	5.8	----
Oklahoma City [4]	1,214	10	47	970.5	1,013.2	.0	80	56	67.8	+8.0	93	30	33	1	35	57	48	57	2.06	−1.2	1.76	3	1	.0	.0	11.1	s.	26	sw.	10	8	17	5	4.7	----
Tulsa [3]	674	10	60	990.2	1,014.2	----	78	53	65.8	+6.9	89	30	37	14	40	78	48	60	1.40	−2.8	.97	5	5	.0	.0	13.8	s.	36	sw.	11	8	12	10	5.6	----
SOUTHERN SLOPE									67.6	+5.6								43	.81	−1.0															
Abilene [3]	1,755	4	59	952.3	1,011.9	−3.7	85	57	71.2	+8.2	99	30	38	2	38	38	43	46	1.33	−1.4	.78	3	2	.0	.0	17.3	s.	41	s.	3	10	12	8	5.2	----
Amarillo [3]	3,604	5	42	887.1	1,011.1	−1.1	78	45	61.4	+7.6	94	18	20	1	45	146	34	42	.73	−1.1	.73	1	2	.0	.0	16.6	s.	49	sw.	10	11	8	11	5.3	----
Del Rio	960	63	71	979.0	1,011.9	−2.0	88	62	75.0	+4.4	99	12	48	1	37	6	52	53	.91	−.9	.62	2	3	.0	.0	10.5	se.	43	n.	13	11	11	8	5.4	----
Roswell	3,614	6	29	889.3	1,010.8	.0	82	43	62.9	+2.3	94	18	24	1	51	111	26	32	.28	−.6	.28	1	3	.0	.0	10.0	s.	40	sw.	23	9	13	8	5.3	----
SOUTHERN PLATEAU									63.6	+3.5								30	.14	−.4															
El Paso [3]	3,916	35	85	884.9	1,010.2	.0	82	53	67.4	+5.1	94	17	29	1	41	47	24	22	.11	−.2	.11	1	2	.0	.0	11.7	w.	38	nw.	24	14	10	6	4.8	
Albuquerque [3]	5,314	5	45	836.1	1,009.8	−.4	74	45	59.3	+5.3	86	17	30	2	40	185	24	30	.33	−.3	.16	3	3	.0	.0	10.4	nw.	43	w.	11	9	13	8	5.2	----
Flagstaff	6,907	34	48	789.7	1,015.6	+5.1	62	30	46.0	+2.7	77	16	18	12	45	569	23	43	.38	−.9	.27	4	0	.9	.0	----	w.	----	----	----	8	11	11	5.6	----
Phoenix [4]	1,107	39	87	973.6	1,012.5	+.6	85	55	69.8	+2.8	99	16	44	1	41	18	34	30	.00	−.4	.00	0	0	.0	.0	7.5	e.	31	w.	23	9	12	9	5.3	----
Tucson [3]	2,555	5	39	925.2	1,012.5	+2.3	85	51	68.0	+3.6	98	16	38	1	43	41	27	23	T	−.3	T	0	0	.0	.0	7.5	se.	30	sw.	23	11	11	8	5.0	----
Yuma	142	9	54	1,007.8	1,012.9	+1.7	88	55	71.2	+1.1	47	16	45	7	43	7	36	32	.00	−.1	.00	0	0	.0	.0	7.6	w.	32	w.	11	16	14	0	3.5	----
MIDDLE PLATEAU									47.6	−.2								49	.99	.0															
Reno [3]	4,527	20	52	859.8	1,013.9	−.7	59	30	44.7	−1.4	72	20	17	8	47	612	27	50	.67	+.2	.33	11	0	.8	.0	13.6	s.	50	se.	8	3	15	12	6.8	
Winnemucca	4,339	5	56	864.9	1,012.9	−1.7	59	32	45.6	−1.1	74	20	20	8	41	581	28	52	1.02	+.2	.45	16	0	2.0	.0	9.9	sw.	40	s.	4	3	7	20	6.5	----
Modena	5,473	10	46	831.0	1,011.5	.0	62	29	45.4	−.6	76	16	12	12	45	588	----	----	1.20	+.3	1.08	6	1	10.8	.0	11.9	sw.	37	sw.	3	8	8	14	7.8	----
Salt Lake City [3]	4,357	32	58	864.5	1,012.2	−1.0	61	38	49.7	+1.8	80	28	26	7	38	460	32	54	1.56	−.2	.55	7	1	1.9	.0	11.1	se.	44	sw.	29	3	10	17	6.1	----
Grand Junction [3]	4,602	5	29	857.4	1,012.2	−1.0	66	40	52.8	+.4	84	28	26	1	39	364	28	41	.48	−.4	.28	5	2	T	.0	10.4	se.	42	sw.	22	7	9	14	7.0	----
NORTHERN PLATEAU									45.3	−2.6								61	1.59	+.5															
Baker [4]	3,471	36	54	892.0	1,013.2	−3.4	53	32	42.5	−2.7	70	20	21	8	36	674	30	66	1.52	+.4	.79	17	0	8.6	.0	6.4	s.	30	sw.	9	1	6	23	7.7	
Boise [3]	2,739	5	49	913.0	1,013.2	−2.0	59	37	48.0	−1.1	79	28	26	26	38	507	32	58	1.37	+.2	.39	13	3	T	.0	11.9	se.	42	s.	28	1	7	22	8.0	----
Pocatello [3]	4,478	5	31	860.1	1,013.2	−.3	57	34	45.1	+.2	78	28	22	7	38	600	29	55	1.51	.0	.31	11	2	3.2	.0	12.4	sw.	42	sw.	17	2	17	11	7.9	----
Spokane [3]	1,929	6	51	927.9	1,012.2	−3.4	53	34	43.5	−4.9	72	21	27	8	33	646	34	69	3.08	+2.0	.89	18	2	.3	.0	9.3	sw.	34	sw.	21	1	6	23	6.8	----
Yakima [3]	1,076	4	54	973.6	1,012.5	−2.7	61	34	47.4	−4.4	78	20	24	26	41	525	32	58	.46	−.1	.17	9	1	T	.0	----	w.	----	----	----	3	8	19	8.2	----
NORTH PACIFIC COAST									47.1	−2.6								76	3.69	+.6														7.5	----
North Head	211	5	55	1,006.1	1,013.9	−4.4	51	41	45.8	−1.7	60	14	34	27	14	573	40	82	4.63	+.5	.61	28	0	T	.0	15.8	s.	47	s.	24	2	5	23	8.2	
Seattle [4]	125	90	321	1,009.1	1,013.9	−3.4	54	42	48.0	−3.1	69	20	36	4	26	511	39	74	2.60	+.2	.51	19	1	T	.0	10.0	s.	34	s.	6	2	5	23	7.9	----
Tacoma	194	172	201	1,003.4	1,013.5	−4.1	54	40	47.0	−1.7	66	20	34	27	24	540	----	----	3.51	+.7	.78	20	2	T	.0	9.2	s.	31	s.	6	1	10	19	8.0	----
Tatoosh Island	86	5	61	1,009.8	1,012.9	−4.0	49	40	44.8	−1.3	56	8	33	3	15	608	38	80	5.54	−.1	1.01	22	0	.2	.0	14.2	e.	47	s.	21	1	7	22	7.6	----
Medford [3]	1,329	29	58	966.8	1,015.2	−1.4	57	36	46.8	−5.3	75	19	26	7	40	551	36	72	2.31	+1.0	.88	15	1	1.3	.0	----	n.	----	----	----	2	4	24	8.0	----
Portland, Oreg. [4]	154	68	106	1,009.1	1,014.6	−3.0	56	43	49.6	−2.2	69	19	35	27	25	462	40	75	4.58	+1.7	.83	21	0	T	.0	6.3	s.	22	e.	8	0	4	26	7.9	----
Roseburg	510	45	76	996.6	1,015.6	−2.7	57	39	48.0	−3.0	72	14	32	7	30	509	40	75	2.67	+.4	.61	21	0	T	.0	4.9	s.	24	sw.	4	0	1	29	9.0	----
MIDDLE PACIFIC COAST									52.5	−3.0								75	4.60	+2.6														8.8	----
Eureka	60	72	88	1,015.6	1,018.0	−1.3	54	43	48.6	−1.3	68	14	34	2	23	491	42	78	6.53	+3.2	1.31	24	0	T	.0	9.0	se.	27	sw.	4	2	6	22	7.0	
Red Bluff [3]	353	5	26	1,003.1	1,015.9	----	62	44	53.1	−5.9	76	19	35	6	30	353	42	70	5.79	+4.1	1.37	17	2	.0	.0	9.9	se.	34	se.	4	6	6	18	7.8	----
Sacramento [4]	66	92	115	1,014.9	1,017.3	+1.7	63	46	54.7	−3.4	76	25	39	29	27	308	45	75	3.05	+1.5	.46	16	0	.0	.0	8.4	s.	32	se.	29	7	10	13	7.1	----
San Francisco [4]	155	112	132	1,012.5	1,018.3	+1.4	59	48	53.6	−1.4	70	14	44	28	15	343	44	76	3.04	+1.4	.53	16	2	.0	.0	9.7	w.	37	s.	8	7	8	15	6.3	----
SOUTH PACIFIC COAST									60.5	+.9								63	1.06	+.1														6.6	----
Fresno [3]	327	5	34	1,005.1	1,017.3	+1.7	72	48	59.8	−.4	85	15	40	4	37	173	45	61	2.28	+1.3	.86	11	1	.0	.0	7.3	nw.	34	nw.	28	9	7	14	6.0	
Los Angeles	338	236	263	1,005.1	1,017.3	+2.1	70	51	60.4	+1.0	90	16	44	4	29	170	46	65	.78	−.3	.38	7	0	.0	.0	7.4	w.	32	nw.	23	8	10	12	6.1	----
San Diego [3]	87	20	55	1,014.6	1,017.6	+2.4	70	53	61.2	+2.2	90	15	44	12	33	138	48	64	.13	−.6	.08	2	0	.0	.0	7.7	nw.	27	s.	28	8	8	14	6.1	----
PANAMA CANAL																																	5.9	----
Balboa Heights [4]	118	6	92	----	1,010.9	----	92	73	81.8	−.2	97	27	69	21	23	0	71	74	.11	−2.6	----	2	1	.0	.0	8.2	nw.	24	nw.	8	6	16	8	6.0	----
Cristobal [4]	27	37	92	----	1,011.8	----	83	78	80.6	−1.1	85	27	75	30	9	0	72	80	1.57	−2.5	----	9	0	.0	.0	13.6	n.	26	ne.	15	0	22	8	6.5	----
ALASKA																																			
Anchorage [3]	132	6	44	1,016.6	1,021.7	----	43	20	31.4	−4.0	55	29	0	1	37	1000	20	59	.08	−.3	.05	2	0	T	.0	6.6	n.	30	n.	22	11	14	5	4.3	----
Annette Island	113	5	53	1,009.5	1,013.5	----	47	34	40.4	−2.5	56	21	25	2	20	741	28	63	1.23	−5.4	.37	11	0	T	.0	----	nw.	----	----	----	8	8	14	6.1	----
Barrow	29	5	27	1,014.2	1,014.6	----	13	−8	2.4	+2.6	33	26	−26	17	41	1878	3	92	.45	+.3	.12	12	0	6.7	29.0	13.3	w.	38	nw.	13	1	9	20	7.4	----
Bethel [3]	28	5	31	1,027.8	1,029.1	----	31	20	25.9	−1.3	38	30	4	22	26	1174	25	92	1.04	+.5	.35	12	0	1.1	.1	12.0	sw.	----	----	----	5	5	20	7.3	----
Cordova [3]	45	5	32	1,005.8	1,016.9	----	45	21	32.9	−3.0	56	8	11	19	34	962	24	70	.08	−3.0	.08	1	0	T	T	----	n.	19	n.	11	18	10	2	3.2	----
Fairbanks [3]	455	5	63	1,004.4	1,022.4	----	33	14	23.2	−6.2	46	29	−18	18	42	1254	18	77	2.30	+2.0	.51	14	0	25.1	5.2	10.1	sw.	27	sw.	11	3	8	19	7.4	----
Galena	139	4	66	1,016.6	1,021.3	----	31	16	23.4	+1.4	39	11	−10	17	29	1249	19	74	.34	+.2	.11	9	----	2.2	10.4	----	sw.	40	sw.	10	4	9	17	6.7	----
Gambell	32	5	32	1,020.7	1,021.7	----	31	25	27.8	+9.1	34	5	9	16	16	1116	27	93	.30	−.4	.15	9	0	1.3	6.0	17.4	sw.	35	sw.	4	2	4	24	8.4	----
Juneau [3]	80	6	30	1,015.2	1,015.9	----	45	24	34.5	−4.9	55	28	7	2	30	917	22	61	.27	−2.5	.12	4	0	4.7	.0	5.8	n.	22	e.	20	7	11	12	5.7	----
Kotzebue [3]	20	5	31	1,019.0	1,019.6	----	24	9	16.8	+2.9	37	3	−16	23	27	1442	17	92	1.34	+1.0	.21	18	0	11.4	32.9	18.4	sw.	40	sw.	10	6	8	16	7.1	----
McGrath [3]	341	5	31	1,012.2	1,025.4	----	34	16	24.7	−1.4	46	12	−10	17	37	1212	19	76	.35	−.1	.15	9	0	2.8	5.0	----	sw.	29	ssw.	24	4	7	19	7.2	----
Nome [3]	22	10	75	1,022.0	1,022.7	----	29	19	24.0	+4.3	35	11	−7	22	30	1227	24	93	1.13	+.5	.30	16	0	8.5	44.2	16.5	sw.	41	sw.	5	6	2	22	7.7	----
Northway [3]	1,718	5	32	956.3	1,021.3	----	32	11	21.6	−3.4	51	30	−20	1	48	1301	12	66	1.13	+.7	.24	10	0	10.9	5.6	8.0	nw.	30	nw.	11	5	5	20	7.4	----
HAWAII																																			
Honolulu [4]	38	86	98	1,014.9	1,016.3	----	78	69	73.2	+.2	82	23	63	2	15	0	64	74	3.14	+1.0	1.85	13	1	0	.0	9.5	ne.	29	ne.	2	11	14	5	5.0	----

[1] Height of barometer cistern above mean sea level on January 1, 1900, or when station was first established since January 1, 1900. When station is moved to new location or airport, the pressure is reduced to the original elevation for homogeneity. These elevations do not represent the present station elevation in most cases.

[2] Data are from airport records. Pressures adjusted to original elevations according to note 1.

[3] Barometric, hygrometric, wind, character of day, and average cloudiness data from airport records; remainder from city office records.

[4] Barometric and hygrometric data from airport records; remainder from city office records.

[5] Barometric, temperature, degree day, and hygrometric data from airport; remainder from city office records.

[6] Bihourly hygrometric data.

NOTE.—Unless otherwise indicated, data in table are city office records

SEVERE LOCAL STORMS FOR APRIL 1948

[The table hereunder contains such data as have been received concerning severe local storms that occurred during the month. A revised list will appear in the United States Meteorological Yearbook]

Place	Date	Time	Width of path, yards	Loss of life	Value of property destroyed	Character of storm	Remarks
South Georgia	Mar. 31–Apr. 1	Starting late 31st, ending late 1st.			$2,500	Rain	Rainfall intensities greatest on record at a number of stations between Bainbridge and Glennville. In about 40 counties from Albany and Brooklet southward, unprecedented losses to farm lands, railroads, highways, and roads, and flooding of numerous communities. Farm land severely eroded. Many bridges and culverts, especially the old wooden type of construction, washed out. Railroad washouts numerous, stopping rail traffic completely in some sections for at least a week. Results represent one of the worst disasters of this type in all Georgia.
Seminole and Decatur Counties, Ga.	1	3:00 a. m.	200	1	10,000	Tornado	One or more tornadoes moved along path from Reynoldsville, northeastward to near Bainbridge. First struck near Reynoldsville, demolishing a home and uprooting trees; several miles farther east, struck again and heavily damaged residence, school, and other small buildings; later moved through Spring Creek Power Dam community, heavily damaging 6 homes. Timber heavily damaged along entire path. 1 person killed and several injured from lightning that accompanied storm.
Savannah, Ga.	1	4:30 a. m.			5,000	Wind	High winds in gusts reached force of 58 m. p. h. Roofs damaged; a number of trees toppled or delimbed; and several airplanes damaged.
Hardeeville, S. C.	1	4:40 a. m.	900	0	75,000	Tornado	A planing mill demolished and other damage to Argent Lumber Co., including destruction of several small residences. Several people injured. Tourist court destroyed.
Valdosta, Ga.	1	10:00 a. m.			4,000	Wind	High winds uprooted about 50 trees, breaking down power and telephone lines and disrupting services; minor damages to house roofs and smaller buildings.
Cook County, Ga.	1	11:30 a. m.	200	0	50,000	Tornado	Struck close to Little River near Ellenton, moved eastward across county, passing between Lenox and Sparks. More than 20 homes and other buildings damaged, some heavily; heavy damage to timber. Most of property damage near Lenox and Sparks.
Hana, Hamoa (Maui) and vicinity, Hawaii.	1	Began about noon.			10,000	Rain and some wind	Torrential rains accompanied by moderately strong winds. Over 17 inches of rain within 24 hours. Highways washed out, blocked at points by landslides. Phone service interrupted and few roofs damaged by falling trees.
Ware, Pierce, and Wayne Counties, Ga.	1	Shortly after 12:00 noon.	200–400	2	250,000	Tornado	Struck Bolen in northeastern Ware County, moved east-northeastward across northern Pierce County, passing through Bristol and Mershon, and continued across Wayne County beyond Jesup. Very heavy damage to timber; many homes and other buildings totally or partially destroyed, chiefly at Bolen, Bristol, and Mershon. 1 person killed and several injured at Bristol; 1 person died and several were injured near Jesup by lightning.
Albany, Ga.	1	Early morning.			500	Wind and electrical	Number of trees toppled, with minor damages to roofs, power, and telephone lines.
Tift County, Ga., northeastern part.	1	do	Narrow	0	5,000	Tornado	Storm struck in wooded pasture, causing considerable timber damage, lifted, and struck again a short distance farther eastward, destroying portion of home and tractor shed.
Colquitt County, Ga.	1	do			500	Wind	Ripped off awnings, delimbed a few trees, and caused minor damages to roofs in Moultrie.
Colquitt County, Ga.	1	Early morning.		0	5,000	Tornado or wind	High winds, with tornadic characteristics, blew over church and barn and did heavy damage to 2 residences. Some timber damage.
Biloxi, Miss.	1	Early morning.			50,000	Wind	Squalls up to 70 m. p. h., in gusts, damaging some planes on Keesler Field.
Lyman-Wortham, Miss.	1	Early morning.				Hail	Hailstones size of hens' eggs broke windows and damaged garden crops.
Marianna, Fla.	1	Early morning.			2,000	Wind	Tenant house and garage wrecked; some damage to other structures.
Camden, S. C., near	1			1		High water	1 person drowned when thrown from horse into flooded swamp.
St. Petersburg, Fla.	2	6:00–8:00 a. m.			5,000	Thunderstorm, with hail, wind, and rain.	Small penthouse ripped from roof of hotel; power lines and trees blown down; rain damaged streets; no damage from hail.
Nebraska, central and eastern portions.	3	10:00 a. m. to 8:00 p. m.	Across State			Wind	Damage in scattered localities. Much dust in air with visibility near 3 miles in some places. Damage of several thousand dollars.
Ft. Lauderdale and vicinity, Fla.	3					Hail	Damaged beans, tomatoes, and peppers; windows broken.
Oconto Falls, Wis.	4	Afternoon			500	Electrical	School building damaged by fire from lightning.
Lexington, Ky.	6	2 p. m.	200	1	30,000	Tornado	Tornado of bounding type. Damage mainly at Keeneland race track, where 1 person was killed.
Henry County, Ky.	6	3:30 p. m.			50,000	Wind and hail	At Turners Station hailstones size of baseballs remained on ground unmelted for several hours. Port Royal and Lacey also hard-hit. Many houses heavily damaged and a few unroofed. Damage to tobacco beds also considerable.
Ashland, Clay County, Ala.	6	3:30 p. m.	200	0	200,000	Tornado	Path northwest to southeast, 1½ miles long. 3 persons injured; 10 buildings destroyed; about 30 buildings damaged. No crop losses.
Lancaster, Ky.	6	4 p. m.			10,000	Wind and hail	Tobacco beds and fruit trees heavily damaged.
Mount Sterling, Ky.	6	5 p. m.			20,000	do	Buildings, tobacco beds, and cover crops heavily damaged.
Paris, Ky.	6	5 p. m.			25,000	do	Damage mostly to crops and buildings. Hailstones as large as walnuts.
Brown and Nemaha Counties, Kans.	6	6 p. m.	¼6			Hail	In strip over western part of Brown and eastern edge of Nemaha Counties. Windows broken and roofs damaged in Mercier and Powhattan. Crop damage light. Length of path, 15 miles.
Randolph County, Mo.	6	9:40 p. m.	333	0	50,000	Tornado	Storm from southwest struck center of Higbee, with greatest damage over 2 blocks. About 200 houses and stores damaged, but none completely destroyed. Many windowpanes blown out; some large plate glass broken. 1 person slightly injured by flying glass.

See footnote at end of table.

SEVERE LOCAL STORMS FOR APRIL 1948—Continued

Place	Date	Time	Width of path, yards	Loss of life	Value of property destroyed	Character of storm	Remarks
Boone County, Mo.	6	10 to 10:05 p. m.			800	Wind	Storm from south; small area. Principal damage to farm 20 miles north of Columbia, where garage, automobile, and several small buildings were damaged.
Trenton, Grundy County, Mo.	6	Night				do	Damage of several thousand dollars. Many roofs damaged, chimneys blown over; some windowpanes broken.
Iowa, western half	6	Evening and night.				Hail and wind	At widely separated points from Cherokee to Mason City, to Boone, to Villisca, and to Centerville. Most extensive damage at Boone, Villisca, and Centerville. Hailstones as large as baseballs broke many skylights in Villisca. Considerable wind and hail damage at Centerville. In Boone, hailstones up to size of walnuts resulted in damages of $15,000 to 3 greenhouses alone.
Griggsville, Pike County, Ill.	7	12:30 a. m.			5,000	Hail	Heavy damage to many roofs; hail averaged size of half-dollar, with some as large as hens' eggs.
Leverett-Flatville-Penfield area, Champaign County, Ill.	7	4:55 p. m.	50	0	100,000	Tornado	2 injuries; 7 farm homes badly damaged and several others to lesser extent. Large hailstones reported.
Chicago, Ill. to LaPorte County, Ind.	7	5 p. m.	440	0	600,000	Tornado	Curved path, west to east; near Lake Michigan shore. Heaviest damage at Porter.
Buckley, near, Iroquois County, Ill.	7	5:15 p. m.	400	0	10,000	Tornado	A few farm buildings damaged.
Manteno-Peotone, Kankakee-Will Counties, Ill.	7	5:20 p. m.	100	0	206,000	Tornado	20 persons injured; heavy loss of poultry, buildings, farm machinery, and orchards.
Hope-Bismarck area, Vermilion County, Ill.	7	5:30 p. m.		0	25,000	Tornado	1 person injured; several farm buildings damaged. Moved into Indiana.
Calumet City, Cook County, Ill.	7	5:30 p. m.	70	0	30,000	Tornado	1 person injured; 1 barn, 2 garages, and 5 roofs destroyed; minor damage to other buildings. Moved into Hammond, Ind.
Manteno, Ill. to northwest of Wheatfield, Ind.	7	5:30 p. m.	200	1	300,000	Tornado	Moved eastward from Illinois, passed south of Lowell to northwest of Wheatfield. Some damage to north and south of path.
Vermilion County, Ill., to Odell, Ind.	7	5:30 p. m.	100	0	50,000	Tornado	Moved northeastward from Illinois. Town of Rob Roy, Indiana, hit.
Grant Park, near, Kankakee County, Ill.	7	5:40 p. m.	100	3	380,000	Tornado	5 persons injured; heavy damage to farm property and livestock.
Saluda, Aiken, and Richland Counties, S. C.	7	5:45 to 8:15 p. m.	900–1,800	0	50,000	Tornado, thunderstorms, and hail.	At Salley, high winds and tornado destroyed property valued at about $35,000; at Wagener, hail caused about $3,000 damage; near Saluda, high wind did about $10,000 damage. A small tornado apparently caused losses of approximately $2,000 in vicinity of Pontiac.
Coal City–Braidwood area, Grundy County, Ill.	7	Late afternoon.		0	25,000	Tornado	2 houses destroyed; other lesser damage.
Alexandria to north of Muncie, Ind.	7	9 p. m.	500	0	100,000	do	Storm from west. Southern edge of Alexandria hit.
Athens, Ga., and vicinity	8	2:30 to 2:45 p. m.			250,000	Hail	Exceptionally heavy hail of 2 inches in diameter in about a 20-square mile area. Windowpanes and plate-glass windows broken; very heavy damage to at least 1,000 house roofs and other smaller buildings, trees, automobiles; heavy damages to gardens, peaches, barley, and other crops. $50,000 loss to crops, chiefly peaches.
Killeen, Bell County, Tex.	8	6 p. m.	1 5		10,000	Hail and wind	Windshields broken on cars; roofs on buildings damaged. Hail damage, $7,000; wind damage, $3,000.
Baltimore, Md.	9	1:35 a. m.–11 p. m.				Wind	Strong west and northwest winds, with gusts to 60 m. p. h. 2 pedestrians injured when wind blew ladders and scaffolding from building. A former Navy Transport grounded.
Highland Heights, Harris County, Tex.	9	3:15 p. m.	600	0	30,000	Tornado	7 miles north-northwest of center of Houston business district. 30 small homes damaged or destroyed. 1 person slightly injured.
Newton County, Mo.	9	11:30 p. m.	880			Hail	At Granby, heavy hail with stones size of hens' eggs. Considerable damage to roofs, strawberry beds, and spring gardens at Granby and over scattered areas in County.
Madison and Suwannee Counties, Fla.	10	5 p. m.	900		5,000–10,000	Hail and wind	Damage in belt 15 or 20 miles long, mostly to rye, with small amount to tobacco; about $100 to property.
Green Bay, Wis.	11	Early morning.			500	Electrical	County police radio transmitter struck and damaged.
Cheyenne, Wyo.	11	6:44 p. m.		0	0	Tornado	Long, stringy funnel cloud observed moving from west-northwest, north of airport, for 10 minutes; did not touch ground. Snow had been falling; temperature 33°, and dew point 32°. Tornado clouds are unusual in this mountainous country, and conditions were not those usually existing during occurrence of tornadoes.
New York, central and northern portions.	11	All day			350,000	Wind	Strong winds—with gusts of 55 m. p. h., recorded at Syracuse, and 80 m. p. h., at Watertown—destroyed and damaged buildings, uprooted trees, interrupted communication and power services, and blew automobiles from highways. 1 man injured at Syracuse.
Richmond, Ky.	12	4:45–5:00 a. m.	800	0	125,000	Tornado	Several buildings at Bluegrass Ordnance Depot destroyed.
Sanger to Oak Hill, Fayette County, W. Va.	12	8–9:30 a. m.	1 1		10,000	Wind with rain	Hundreds of trees reported uprooted, roofs damaged, and small buildings overturned. Storm moved from southwest.
Buchanan Dam, Llano County, Tex.	12	8:30 p. m.	1 8		7,000	Hail	Kingsland and Gainsville communities. Crop damage, $5,000; other property, $2,000.
New Roads to Bayou Sara, La.	13	8:45 a. m.			10,000	Wind	1 home badly damaged, 6 others unroofed, trees uprooted, power lines severed in and about New Roads; 4 dwellings destroyed at Bayou Sara.
New Roads, 6 miles south of, La.	13	Noon				do	Famous plantation home, "Austerlitz," constructed in 1832, badly damaged, with several barns destroyed and trees uprooted.
Sheridan County, Wyo.	18–19					Heavy snow	Considerable damage to trees, shrubbery, telephone, and electric wires.
Howell, Mich.	20	2 p. m.			25,000	Thunderstorm	Barn, containing 50 cattle and 2 horses, destroyed by lightning and resulting fire.
Pontiac, Mich.	20	2 p. m.			60,000	do	Wind, lightning, and hail damaged power lines, several buildings, and windows.
Cheraw, near, S. C.	21	During day			8,000	Electrical	Fire, caused by lightning, destroyed a cotton gin and tons of fertilizer.
Rose Hill, Colo.	22	1:15 p. m.			500	Wind	3 miles north of Denver Airport; porch roof torn from house; new masonry wall collapsed.
Ionia, Chickasaw County, Iowa.	23	3:25 p. m.	100	5	250,000	Tornado	Funnel cloud first observed about 2 miles northeast of Nashua. First wind damage occurred about 2 miles southwest of Ionia where farm buildings were demolished. Traveled northeastward through center of Ionia, causing total destruction over path about 300 feet wide and 3 blocks long. Same storm of somewhat lesser intensity caused further damage on farms in northeastern Chickasaw County and near Cresco in eastern Howard County. In Ionia, 6 homes, 2 churches, a store, meeting hall, and bandstand were completely demolished; 9 residences sustained heavy damage; 25 persons injured, 6 requiring hospitalization.

See footnote at end of table.

SEVERE LOCAL STORMS FOR APRIL 1948—Continued

Place	Date	Time	Width of path, yards	Loss of life	Value of property destroyed	Character of storm	Remarks
Rochester, 7 miles northeast, Olmsted County, Minn.	23	5:10 p. m.	220	0	50,000	Possibly a small tornado.	Barns, outbuildings, silos, windmills, and farm machinery on 4 farms demolished, and buildings on several other farms damaged; many trees uprooted; several minor personal injures. Path from south to north, about 5 miles long.
Spink and Hand Counties, S. Dak.	23-24					Rains and wind	Heavy showers and high winds of tornadic force, accompanied by lightning and some hail, damaged communication and power lines, several buildings, and haystacks; some poultry killed.
Ellis County, Kans.	24	11 a. m.	100	0	8,000	Tornado	Storm from west first struck 1 mile north of Hays, then apparently lifted and struck again 1 mile east of Victoria. Vortex cloud plainly seen at Victoria. Barns and sheds blown down. 1 man injured. Path 10 miles long.
Akron, Colo.	24	12:48 p. m.		0		do	In isolated section south of Akron.
Akron, Colo.	24	1:57 p. m.		0		do	In isolated section 8 miles northeast of Akron C. A. A. station.
Minnehaha County, S. Dak.	24	3:15 p. m.	Narrow	0	10,000	do	Tornado, west of Sioux Falls, inflicted much damage along 4-mile path and wrecked several farm buildings.
Minnehaha County, S. Dak.	24	4:10 p. m.	Narrow	0	40,000	do	Tornado southeast of Sioux Falls; wrecked farm buildings and town property of Brandon.
Pipestone and Rock Counties, Minn.	24	4:10–4:45 p. m.			2,000	Hail	Light to heavy hail, accompanying severe thunderstorm, caused damage to real property.
Hamlin County, S. Dak.	24	Afternoon	Narrow	0		Tornado	Tornado from south of Castlewood to near Goodwin wrecked several buildings, uprooted trees, and broke windows.
Chase County, Kans.	24	5:30 p. m.	300	0	10,000	do	Storm from southwest, about 8 miles south of Cedar Point. Damage to rural property. Path 3 miles long.
Shawnee, Pottawatomie County, Okla.	24	6–6:30 p. m.			2,000	Wind	2 dairy barns north of Shawnee demolished.
Oklahoma City, Okla.	24	6:45–8:25 p. m.			4,000	Wind and electrical	1 house set on fire by lightning, but little damage. Mostly wind damage to buildings under construction.
Mason, Mich.	26	Late afternoon			10,000	Thunderstorm	Hangar and several airplanes damaged at Jewett Airport by high winds.
Clark County, Ohio	27	2:15 p. m.			2,500	Wind and hail	Numerous trees uprooted, several cars damaged, and 1 garage demolished by falling trees. Trees damaged by hail.
Beaufort County, N. C.	27	4:30 p. m.				Hail	Hailstones 1½ to 2¼ inches in diameter. Some damage to crops, especially potatoes; cars dented; many windows broken. Most severe damage just north of Washington, N. C.
Gallia County, Ohio	27					do	Hail destroyed several thousand tomato plants.
Geauga County, Ohio	27					Hail and lightning	Fruit orchard damaged by hail. Lightning destroyed barn by fire.
Lassen County, Calif.	27-30					Wind	Strong wind damaged spring wheat.
Southern San Joaquin Valley, Calif.	28	Afternoon		1	10,000,000	Wind, dust, and rain.	High winds caused heavy dust storm and damaged cotton, potatoes, peas, and fruit trees. 1 person killed in automobile collision during dust storm. Subsequent rain caused crusting of heavy soils and, with soil erosion, made extensive replanting of cotton necessary. Damage to crops estimated at $8,000,000; to automobiles, buildings, machinery, and power lines, $2,000,000.
Snake River Valley, near Ririe, Idaho.	29	10 a. m.–6 p. m.				Wind	Strong winds blew down some old buildings and numerous sign boards.
Dillon, Beaverhead County, Mont.	29					do	Strong wind overturned and wrecked a light aircraft. A few lambs killed.
Lustre, vicinity of, Valley County, Mont.	29					do	Winds of 40 to 45 m. p. h. blew windows out of schoolhouses and off hothouse beds; storm shelters were wrecked.

[1] Miles instead of yards.

791792—48——2

LATE STORM REPORTS FOR JANUARY, FEBRUARY, AND MARCH, 1948

[The table hereunder contains such data as were received concerning severe local storms that occurred during these months. A revised list will appear in the United States Meteorological Yearbook]

Place	Date	Time	Width of path, yards	Loss of life	Value of property destroyed	Character of storm	Remarks
	January						
Missouri, most of State	Dec. 31–Jan. 1	During night and all day.		15	$750,000	Glaze, sleet, and snow.	Worst storm of this nature in Missouri since one of December 16–19 1924. Extensive damage to fruit and shade trees, and power and communication lines and poles. A strip about 60 miles wide across middle of State, from Vernon and Bates Counties northeastward to Knox, Lewis, and Ralls Counties hardest hit. 14 persons killed in Missouri Pacific train wreck near Otterville. Another died of exposure at Warsaw. Injuries to many persons and damage to many automobiles because of ice-covered highways, roads, streets, and sidewalks. Southwestern Bell Telephone Co. reported damage of $100,000 to their lines and poles, with 14,248 wire breaks, 300 poles down, and 200 toll lines out of service in their eastern Missouri division alone. At Columbia, entire REA system knocked out. Total damage to trees in Callaway County estimated at $500,000 or more.
	February						
Bowling Green, Mo	27	12:30 to 1:30 p. m.	100		1,000	Wind	Buildings damaged in southern part of city.
St. Louis and St. Louis County, Mo.	27	1:40 p. m				do	Damaged plate glass windows, chimneys, and more than 300 street lights in St. Louis proper.
	March						
Caruthersville, Pemiscot County, Mo.	19	4:30 a. m	[1] 1½		2,000	do	Several roofs blown off; some sign boards destroyed and trees blown down.
Easterville, Caldwell County, Mo.	19	5:00 a. m	217	0	15,200	Tornado	Storm from southwest; path 2 miles long. Farm buildings, 1 residence, and bell tower of church damaged. Some chickens killed.
Defiance, St. Charles County, Mo.	19	5:30 a. m	440	0		do	Storm from southwest. Power and telephone lines blown down, trees uprooted, and signs scattered. Many farm buildings destroyed; plate glass windows blown in. Damage to buildings restricted to frame structures.
Augusta, near, St. Charles County, Mo.	19	5:45 a. m			5,000	Wind	Damage, mostly to farm buildings.
Washington County, Mo., southern portion.	19	6:00 a. m	440	4		Tornado	20 persons injured. Several homes destroyed. Hardest hit were Belgrade, Belleview, and Concord Townships. Chickens and several heads of livestock killed.
Crystal City, Jefferson County, Mo.	19	6:00 a. m			1,000	Wind	Roofs and trees damaged.
Settleton (northern part of Bonne Terre), St. Francois Co., Mo.	19	6:15 a. m	440	0	200,000	Tornado	18 persons injured, 3 seriously. Path of greatest damage, 1 mile. 20 homes destroyed; 30 more damaged; many trees uprooted and telephone and telegraph lines broken.
Alton and Fosterburg, Madison Co., Ill.	19	6:30–6:37 a. m	440	9	600,000	do	151 persons injured; 60 dwellings, 40 barns, 250 other buildings destroyed. Fosterburg almost entirely destroyed.
Bunker Hill, Dorchester, Gillespie, Macoupin Co., Ill.	19	6:44–6:50 a. m	440	24	3,000,000	do	295 persons injured; 249 homes destroyed, 425 others damaged; 90 barns and 520 other buildings destroyed; 194 barns and 800 other buildings damaged. Heaviest damage in village of Bunker Hill.
Franklin County, Mo	19	6:51 a. m	220	0	250,000	do	Path 16 miles long from near Beaufort through Jeffriesburg to east of Union. Crop damage, $5,300; livestock losses, $7,000. Nearly everything in path damaged or destroyed. Storm from southwest first struck 3 miles west of Sullivan, where damage was slight; storm then turned north, wrecked home, barn, and all outbuildings near Noser's Mill, then turned slightly east and damaged or destroyed a number of homes, barns, and outbuildings, continuing northeastward; many other buildings destroyed.
New Athens, St. Clair County, Illinois.	19	7 a. m	100	0	20,000	do	Buildings unroofed, windows broken, smoke stacks toppled.
Montgomery County, Ill., northwestern portion.	19	6:56 a. m	440	0	50,000	do	3 persons injured; 150 buildings damaged, a few totally destroyed.
Christian County, Ill., southeastern portion.	19	7:15 a. m	440	0	80,000	do	Some buildings damaged, a few completely destroyed. Few farm animals killed.
Shelby County, Ill., northwestern portion.	19	7:35 a. m	600	0	35,000	do	3 barns and several other buildings completely destroyed; several others damaged; few farm animals killed.
Farmington, St. Francois County, Mo.	19	8 a. m	880		5,000	Wind	Severe damage in small area; also minor damage to trees and roofs.
Rossville Area, Vermilion County, Ill.	19	10:30 a. m.–1:30 p. m.		0	50,000	Wind and tornado	Many buildings unroofed and trees uprooted.
Shelby County, Mo	19	a. m				Wind	Damage in scattered areas, mostly confined to farm buildings.
Herculaneum, Jefferson County, Mo.	19	2:05 p. m	[1] 1		1,000	Hail	Most of damage to roofs. Path 1 mile long.
Maryland	19	8–45 p. m	200–450	0	45,000	Tornado	Storm moved eastward from Fearer across Keyser Ridge to Meadow Mountain. Path approximately 24 miles long. Small damage to crops; timbered areas greatly damaged; also small buildings. Some livestock and poultry lost.
Indiana, entire State	19				4,000,000	Wind	Unusually high winds. Worst damage from Crawfordsville to Fort Wayne.
Carrollton, and vicinity, Mo	25	9:30 p. m	[1] 1		2,500	do	Most damage to barns and small buildings. Only minor damage in Carrollton.
White Hall, Greene County, Ill.	26	5 a. m			1,000	do	Many roofs damaged. Small stones.
Grafton, Jersey County, Ill	26	1:30 p. m			2,000	Hail and wind	Many roofs and windows destroyed. Hail reported up to 2 inches in diameter.
St. Charles, Mo., near	26	1:25 p. m	100	0	65,000	Tornado	Storm from southwest. 2 persons slightly injured. Damage confined to Smartt Field, a deactivated Navy field. Only 4 persons at Field: 2 injured trying to get to safe place from storm when a ¾-ton pick-up truck was tossed 75 feet against wrecked Administration Building.
Elsah, Jersey County, Ill., near.	26	2 p. m		0	75,000	do	
Pleasant Plains, Menard County, Ill., near.	26	3:30 p. m	880	0	52,000	do	Many buildings damaged. Some livestock killed.
Alpha, Henry County, Ill	26	4:30 p. m			10,000	Hail	Many windows broken; greenhouse badly damaged; and some roofs damaged.
Terre Haute to Redkey, Ind	26	5:00 p. m	880	20	3,000,000	Tornado	Storm moved northeastward. Much of Coatesville demolished. Severe damage in Danville. Minor damage for several miles on each side of path.
Murfreesboro, Tenn	26	Night				Thunderstorm	Wind destroyed 2 houses and several barns.
Maury County, Tenn	26	9:45 p. m	200	0	700,000	Tornado	Path 17 miles long. Approximately 20 homes damaged; 3 homes destroyed; many barns and outbuildings damaged or destroyed; 1 church demolished; 1 store leveled; Monsanto Chemical Co. Plant damage, $200,000. Trees uprooted. 2 persons injured at Monsanto.
Ryall Springs, Hamilton County, Tenn.	26	Night		0		do	Several house roofs removed and large trees blown down.
Nashville, Tenn., 10 miles south.	26					Thunderstorm with hail.	Heavy hail 2 inches deep, with some drifts to 15 inches.
Montgomery County, Tenn., southern portion.	26					do	Hail damaged roofs and broke windowpanes.
Ozark Beach, Taney County, Mo.	30	6:30 p. m	[1] 1¼	0	16,300	Tornado	Storm from southwest in path 10 miles long; destroyed 2 houses, 3 tourist's cabins, and 3 barns. Several other barns and outbuildings destroyed. Crop losses estimated at $1,000; livestock, $300.

[1] Miles instead of yards.

SOLAR RADIATION DATA FOR APRIL 1948

[Solar Radiation Investigation Section, I. F. HAND in Charge]

Explanation of Tables 1 and 2 and references to descriptions of instruments, stations, and methods of observation, and to summaries of data, are given in the MONTHLY WEATHER REVIEW, vol. 72, No. 1, January 1944, p. 43. A list of pyrheliometric stations is given on page 45 of that issue. An explanation of the formula used in computing the air mass values for each station listed in Table 1 appears in vol. 75, No. 3, March 1947, p. 47.

Table 3 gives values of solar and sky radiation plus radiation reflected from the ground as received on a vertical surface facing south for the current month; this table was first included in the solar radiation data for the January 1948 issue of the REVIEW.

TABLE 1.—*Solar radiation intensities during April 1948*

[Gram calories per minute per square centimeter of normal surface]

Date	Sun's zenith distance									Vapor pressure	
	A. M.				0.0°	P. M.					
	78.7°	75.7°	70.7°	60.0°		60.0°	70.7°	75.7°	78.7°	7:30 a. m.[1]	1:30 p. m.[1]
MADISON, WIS.											
	Air mass										
	4.81	3.84	2.88	1.92	*0.96	1.92	2.88	3.84	4.81		
April	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mb.*	*mb.*
3				0.98						4.6	5.1
6	0.65	0.77	0.80	1.16	1.22					5.1	9.8
8	.76	.91	1.04	1.22	1.51					4.6	4.6
14	.76	.92	1.04	1.22	1.43					5.1	4.0
15	.59	.69	.81							6.6	9.1
16	.64	.68	.77	1.06						7.4	5.8
17	.60	.76	.95	1.16	1.38					4.6	4.4
21	.66	.83	.95	1.10	1.30					5.8	6.6
24	.60	.74	.83	1.03	1.27					14.8	19.0
28										7.8	9.4
29	.76	.87	.90	1.08	1.35					6.6	8.4
30		.71	.86	1.02	1.33					7.8	7.2
Means	.67	.79	.90	1.10	1.35						
Departures	−.03	−.06	−.10	−.08	−.06						
LINCOLN, NEBR.											
	Air mass										
	4.77	3.81	2.86	1.91	*0.95	1.91	2.86	3.81	4.77		
April	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mb.*	*mb.*
1					1.50					4.2	4.6
5					1.48	1.20	1.05	0.96	0.83	7.4	7.8
7			0.92	1.16	1.42	1.21	1.01	.88	.77	10.2	9.4
8					1.49	1.24	1.11	1.01	.90	3.5	4.0
14				1.07	1.34					6.6	9.8
16			1.05	1.18	1.39					7.8	6.4
21				1.18						7.2	9.1
Means			(.98)	1.15	1.44	1.22	1.06	.95	.83		
Departures			+.01	−.03	−.01	+.05	+.10	+.12	+.13		
CLIMAX, COLO.											
	Air mass										
	3.24	2.59	1.94	1.29	*0.65	1.29	1.94	2.59	3.24		
April	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mb.*	*mb.*
1						1.47	1.34	1.21			
2				1.59							
5				1.54							
8				1.49							
13				1.54		1.42					
14				1.40							
19				1.44		1.41	1.26	1.14	1.04		
20				1.43							
28				1.39			1.26	1.14	1.07		
29				1.36							
30				1.37		1.21	.98	.81	.69		
Means				1.46		1.38	1.21	1.08	.93		
Departures				+.02		.00	−.01	−.01	−.01		

TABLE 1. *Solar radiation intensities during April 1948—Con.*

Date	Sun's zenith distance									Vapor pressure	
	A. M.				0.0	P. M.					
	78.7	75.7	70.7	60.0		60.0	70.7	75.7	78.7	7:30 a. m.[1]	1:30 p. m.[1]
TABLE MOUNTAIN, CALIF.											
	Air mass										
	3.76	3.01	2.26	1.51	*0.75	1.51	2.26	3.01	3.76		
April	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mb.*	*mb.*
18				1.49							
19				1.39							
20				1.39							
21				1.41							
24	1.10	1.18	1.29	1.42							
25				1.45							
26	1.10	1.19	1.29	1.41							
30				1.43							
Means	(1.10)	(1.18)	(1.29)	1.42							
Departures	+.03	+.02	+.02	+.02							
BOSTON, MASS.											
	Air mass										
	4.96	3.96	2.97	1.98	*0.99	1.98	2.97	3.96	4.96		
April	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mb.*	*mb.*
9		0.88	0.96	1.16						5.1	4.0
23				1.11						5.3	6.6
27				1.30						3.3	4.8
Means		(0.88)	(0.96)	1.19							
Departures		+.07	.00	+.09							
BLUE HILL, MASS.											
	Air mass										
	4.86	3.89	2.92	1.94	*0.97	1.94	2.92	3.89	4.86		
April	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mb.*	*mb.*
3	0.86	0.94	1.02							4.4	2.6
4	.99	1.08	1.19	1.35						1.7	1.9
5							0.80		0.59	4.1	5.6
6	.36		.64							10.4	14.0
7	.79	.89	1.00							8.1	7.3
10	.93	1.04	1.18	1.35	1.56	1.34	1.17	1.05	.96	2.3	0.9
11	.84	.98	1.11	1.25						2.0	3.6
17				1.36	1.58	1.34	1.17	1.04	.93	3.6	2.5
18	.87	.99	1.13	1.28	1.54	1.25	1.00			2.6	3.7
22	.80	.90	1.02	1.13	1.51	1.16	1.00	.89	.80	4.8	3.8
25				1.08	1.49		1.03	.90	.77	6.1	3.5
26	.88	1.00	1.10	1.27	1.48					4.6	6.5
27	.91	.99	1.12	1.20	1.54	1.22	1.10	.96	.86	3.5	4.1
Means	.82	.98	1.05	1.25	1.53	1.26	1.04	.97	.82		
Departures	+.03	+.08	+.02	+.06	+.13	+.12	+.08	+.15	+.12		
RATIO, BOSTON/BLUE HILL ON COMPARABLE DATES											
				(1.08)							

*Extrapolated.

[1] 75th Meridian time.

TABLE 2.—*Daily totals and weekly means of solar radiation (direct + diffuse) received on a horizontal surface*

[Gram calories per square centimeter]

Date	Washington, D. C.	Madison, Wis.	Lincoln, Nebr.	New York, N. Y.	Fresno, Calif.	Fairbanks, Alaska	Columbia, Mo.	Boston, Mass.	Nashville, Tenn.	Twin Falls, Idaho	La Jolla, Calif.	Riverside, Calif.	Blue Hill, Mass.	Newport, R. I.	Salt Lake City, Utah	Put-in-Bay, Ohio	St. College, Pa.	Davis, Calif.	Toronto, Canada	Ithaca, N. Y.	Boulder, Colo.	East Wareham, Mass.	Honolulu, T. H.	Pearl Harbor, Hawaii	East Lansing, Mich.	Summit, Mont.	Soda Springs, Calif.	Grand Lake, Colo.
1948	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*
Apr. 1	246	341	565	73	546	38	632	26	190	481	406	450	37	44	530	146	345	463	184	267	523	72	371	361	66	376	609	286
Apr. 2	287	333	539	98	163	136	649	45	566	158	276	112	86	233	359	472	230	151	251	51	557	238	558	503	287	208	164	642
Apr. 3	568	481	501	464	452	138	611	437	539	221	287	178	374	476	344	586	534	470	600	235	572	584	654	617	426	236	331	623
Apr. 4	593	488	496	586	426	281	470	581	559	359	533	474	608	623	349	504	548	352	473	431	464	600	418	606	423	439	126	436
Apr. 5	501	312	534	465	422	140	310	388	196	370	583	280	455	490	502	454	380	416	367	312	511	452	628	621	211	464	178	623
Apr. 6	350	486	312	152	607	239	399	204	332	312	612	525	286	372	205	342	133	523	542	91	545	397	368	341	411	195	420	585
Apr. 7	152	156	612	512	638	62	621	527	258	421	622	634	596	579	624	262	37	554	299	323	638	560	240	240	250	390	519	636
Means	385	371	508	336	465	148	528	316	377	332	474	379	349	402	416	395	315	418	388	244	544	414	462	483	301	330	335	547
Departures	+9	+2	+118	−10	−35	−180	+71	−22	−42	−92	−24	−85	−36	−3	−6	+44	−48	−63	+68	−29	+83	+28	−64	−31	+8	----	−81	----
Apr. 8	238	149	635	53	419	128	622	96	369	472	447	492	157	152	444	586	264	133	480	352	539	191	541	579	359	470	228	617
Apr. 9	482	541	422	378	124	36	476	465	643	328	584	592	501	513	494	364	268	124	490	115	494	533	612	542	312	188	128	544
Apr. 10	629	415	237	622	386	232	338	580	105	347	438	223	655	671	143	555	593	496	579	450	430	626	612	547	414	322	533	249
Apr. 11	78	506	398	195	465	156	538	295	364	463	399	295	360	363	411	92	36	658	22	92	149	370	434	376	129	201	664	245
Apr. 12	290	380	206	116	694	134	49	104	396	448	631	661	123	105	411	226	206	707	511	280	630	103	679	620	219	397	733	536
Apr. 13	123	379	482	100	338	73	82	183	175	488	618	607	198	158	593	89	27	222	173	82	638	197	652	451	119	287	456	723
Apr. 14	46	598	568	40	370	191	679	34	88	314	566	602	73	48	358	68	37	181	23	44	425	60	620	583	41	493	370	614
Means	270	424	421	215	400	136	398	251	306	409	526	496	295	287	407	283	204	360	325	202	472	297	593	528	228	337	445	504
Departures	−128	+20	+11	−138	−145	−216	+45	−89	−67	−43	+3	+21	−74	−117	−43	−85	−182	−185	−31	−93	+25	−92	+15	−8	−105	----	−65	----
Apr. 15	437	378	564	249	415	404	531	186	683	375	573	469	271	369	504	613	379	573	476	124	486	238	718	456	472	290	312	514
Apr. 16	562	522	622	454	530	412	677	461	615	490	594	658	548	492	507	542	460	115	266	309	449	442	552	370	466	368	154	608
Apr. 17	697	563	593	681	697	501	675	607	661	382	610	642	694	688	382	703	657	742	624	490	529	630	733	662	594	223	489	669
Apr. 18	626	321	483	634	694	516	639	606	622	547	480	668	686	690	495	314	560	804	367	457	590	639	711	631	101	544	758	664
Apr. 19	586	233	568	318	640	423	321	418	601	625	236	646	539	486	631	456	343	698	187	199	676	523	688	570	372	530	725	730
Apr. 20	577	183	349	294	705	502	433	220	505	504	292	286	310	318	556	357	411	675	255	114	631	318	684	614	434	666	760	818
Apr. 21	429	609	607	289	510	437	670	108	562	361	266	311	178	176	524	566	139	200	562	75	471	167	578	590	593	636	441	560
Means	559	401	541	417	599	456	564	372	607	469	436	526	461	460	514	507	421	544	391	252	547	422	666	556	433	465	520	652
Departures	+139	−4	+97	+30	+14	+73	+113	−7	+145	−13	−65	+18	+70	+43	+41	+78	+17	−32	−14	−45	+69	+12	+66	+8	+48	----	−41	----
Apr. 22	512	218	180	635	513	534	478	580	571	406	481	330	682	698	176	596	649	499	576	474	397	641	483	573	489	269	361	459
Apr. 23	632	407	230	357	751	590	559	515	537	525	511	592	574	559	577	267	310	686	340	316	343	545	632	552	194	449	732	570
Apr. 24	446	388	358	279	708	585	518	518	434	569	643	707	417	572	689	328	313	676	133	144	17	------	663	544	202	328	697	207
Apr. 25	543	525	326	507	726	578	447	618	610	635	643	680	703	654	410	628	354	664	365	403	563	648	650	608	603	260	733	280
Apr. 26	552	243	260	529	711	193	508	551	491	385	614	668	534	710	369	434	377	375	621	450	607	657	581	510	427	544	177	515
Apr. 27	216	354	561	519	718	284	711	612	532	498	566	650	713	734	586	314	97	311	167	410	642	670	684	634	265	481	366	760
Apr. 28	76	593	661	251	397	544	761	453	549	339	411	292	520	513	661	518	103	114	632	261	653	604	720	689	335	579	266	697
Means	425	390	368	440	646	473	569	549	532	480	553	560	592	634	495	441	315	475	405	351	460	628	631	587	359	416	476	498
Departures	−23	−46	−56	−4	+70	+95	+135	+183	+106	−26	+33	+84	+150	+171	−40	+28	−96	−71	+5	−29	−42	+176	+46	+44	−1	----	−121	----

ACCUMULATED DEPARTURES ON APRIL 28, 1948

	−847	+994	+1442	−1792	+4039	−1750	+3150	−1022	−91	....	−371	+3310	−854	−287	−1750	+2709	−1484	−1610	+1708	−3934	−25	−287	....	....	+1281	....	−2681	....

TABLE 3.—*Daily totals and weekly means of solar and sky radiation plus the radiation reflected from the ground, as received on a vertical surface facing south at Blue Hill, Mass., during March 1948*

Date	1	2	3	4	5	6	7	Mean	8	9	10	11	12	13	14	Mean
Gm. cal/cm²	16	49	250	434	305	183	418	236	76	329	427	214	75	81	21	175

Date	15	16	17	18	19	20	21	Mean	22	23	24	25	26	27	28	Mean
Gm. cal/cm²	136	330	398	385	314	156	77	257	358	304	321	356	340	336	251	324

Chart I. Departure (°F.) of the Mean Temperature from the Normal, and Wind Roses for Selected Stations, April 1948

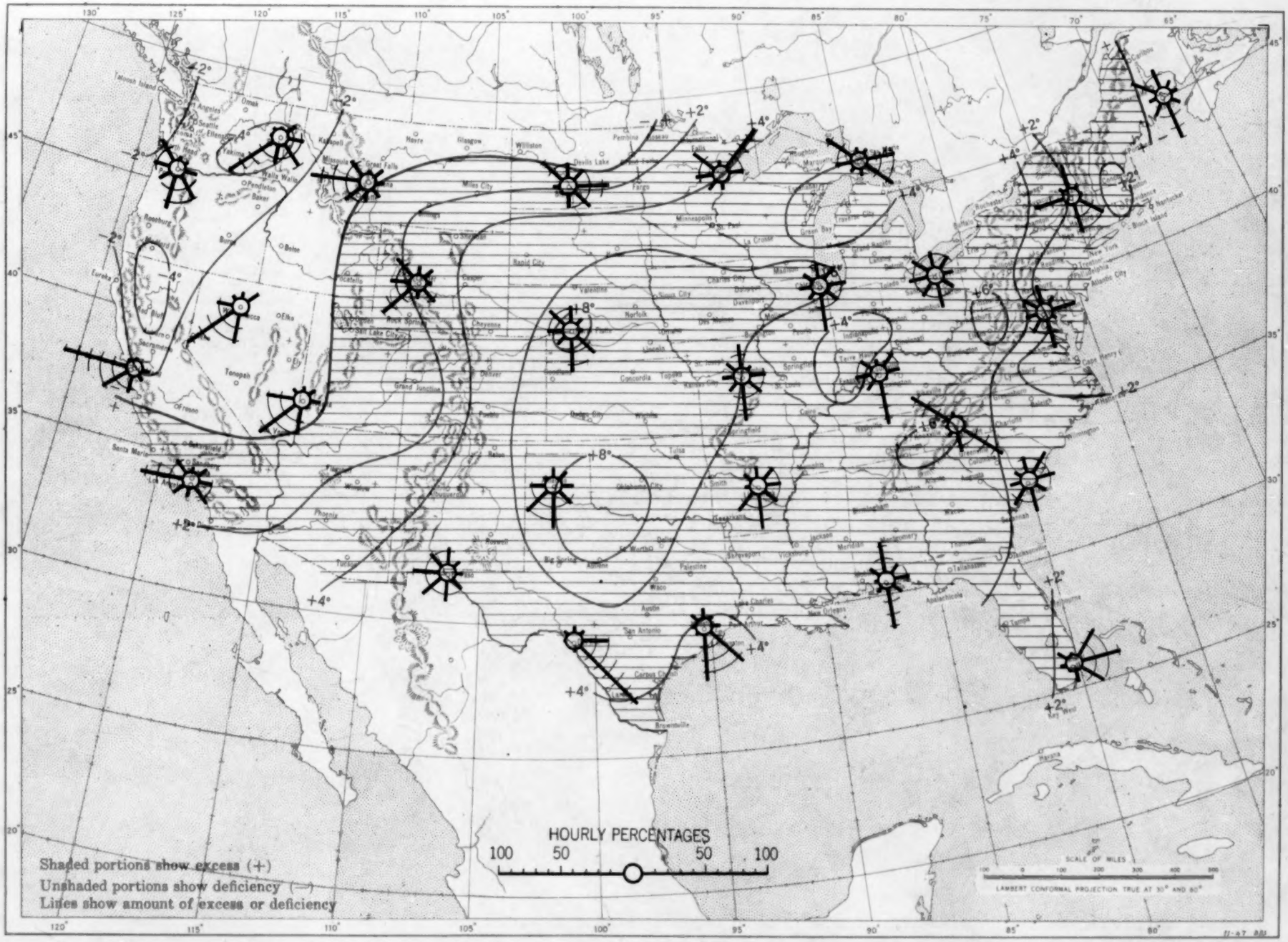
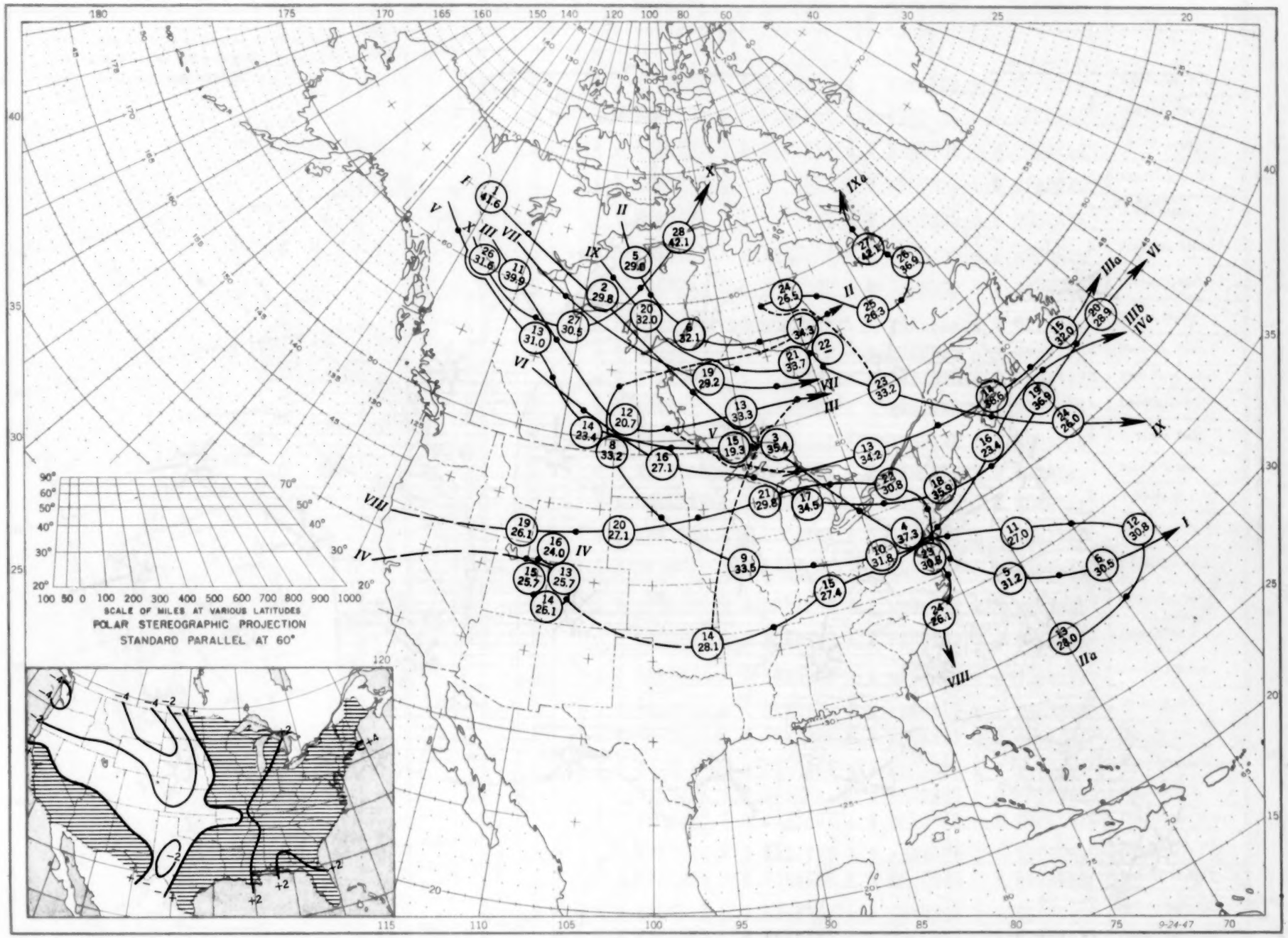
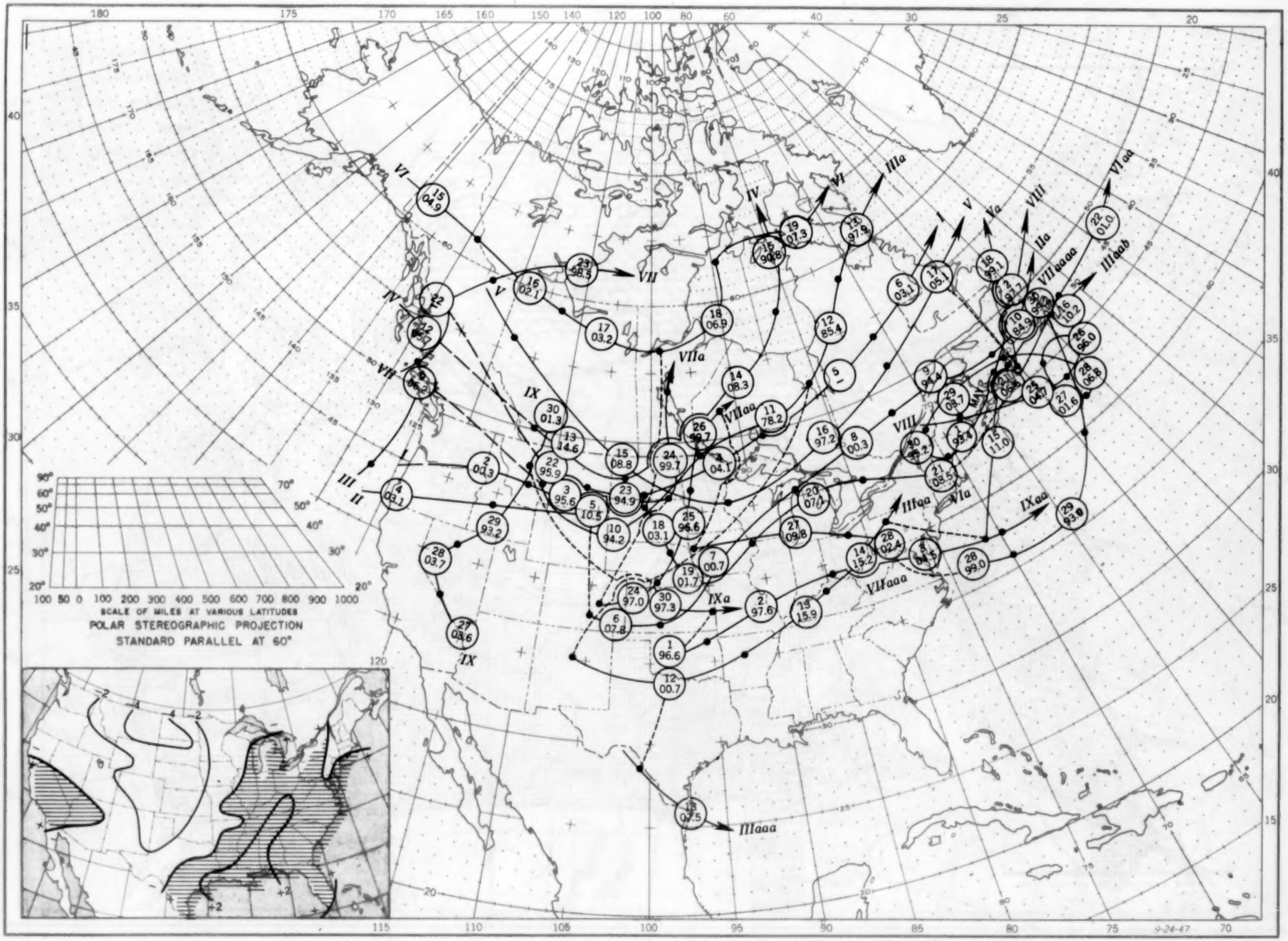


Chart II. Tracks of Centers of Anticyclones, April 1948. (Inset) Departure of Monthly Mean Pressure from Normal



Circle indicates position of anticyclone at 7:30 a. m. (75th meridian time), with barometric reading. Dot indicates position of anticyclone at 7:30 p. m. (75th meridian time)

Chart III. Tracks of Centers of Cyclones, April 1948. (Inset) Change in Mean Pressure from Preceding Month



Circle indicates position of cyclone at 7:30 a. m. (75th meridian time), with barometric reading. Dot indicates position of cyclone at 7:30 p. m. (75th meridian time)

Chart IV. Percentage of Clear Sky Between Sunrise and Sunset, April 1948

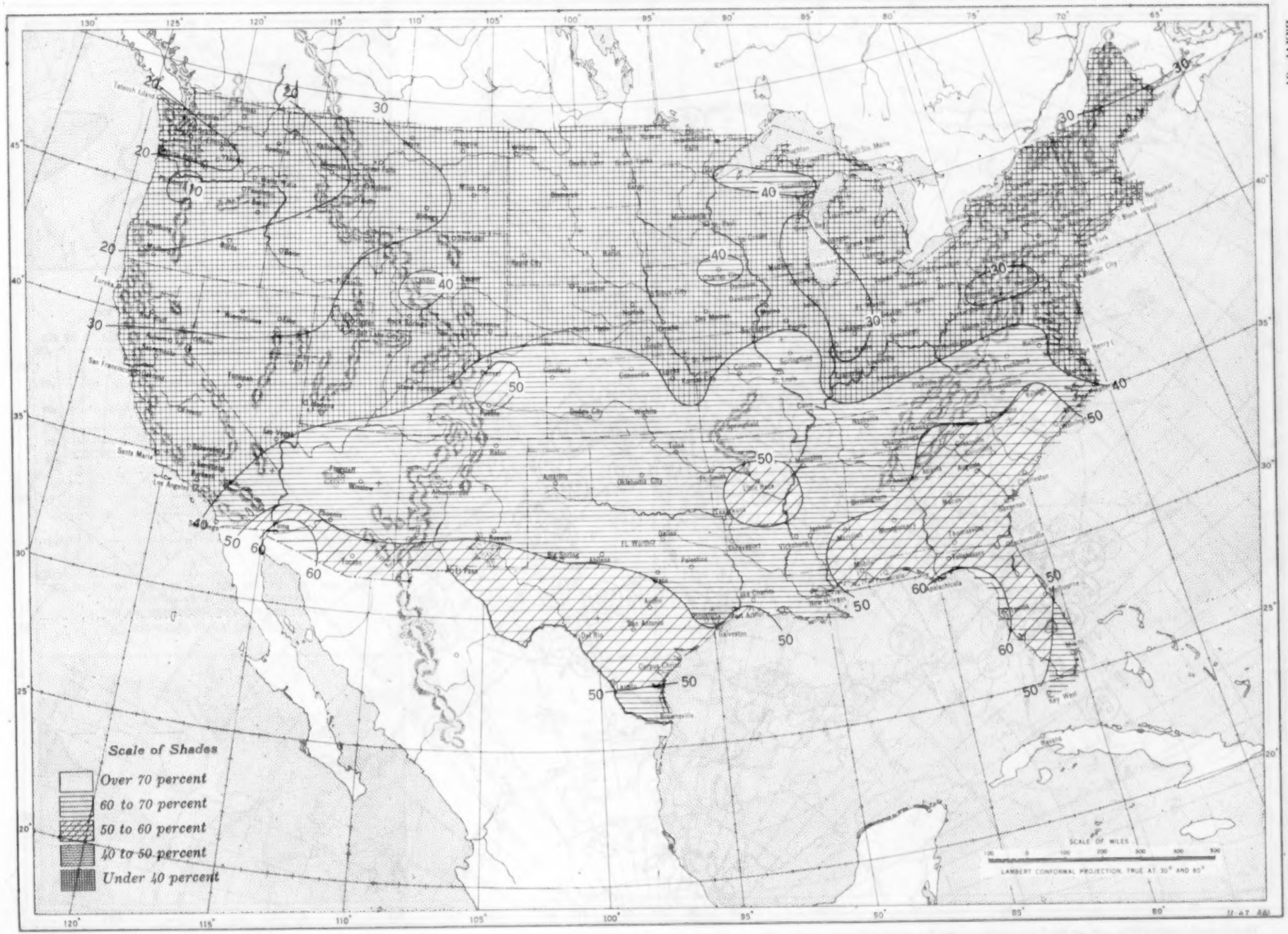


Chart V. Total Precipitation, Inches, April 1948. (Inset) Departure of Precipitation from Normal

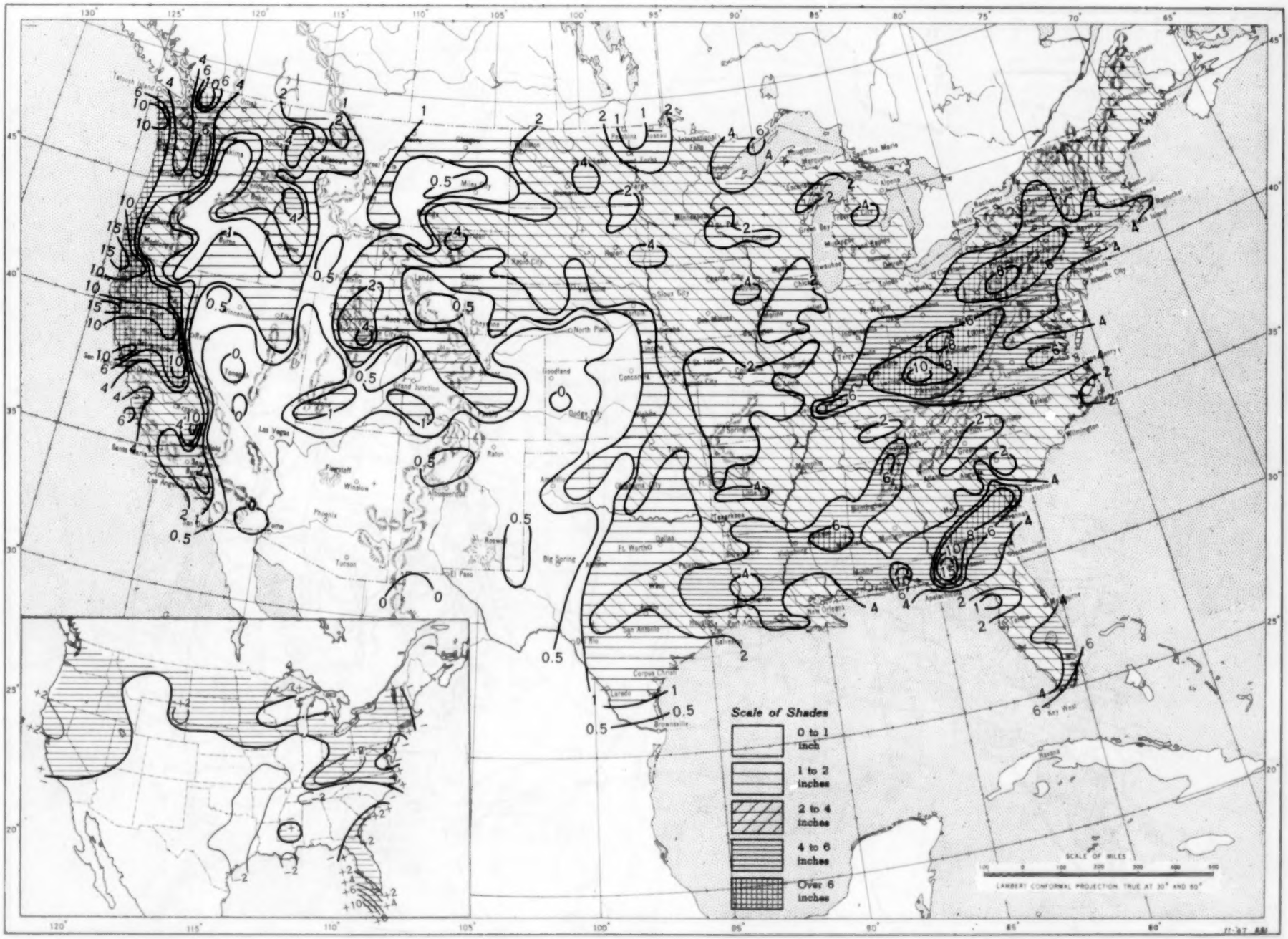


Chart VI. Isobars (mb.) at Sea Level and Isotherms (°F.) at Surface; Prevailing Winds, April 1948

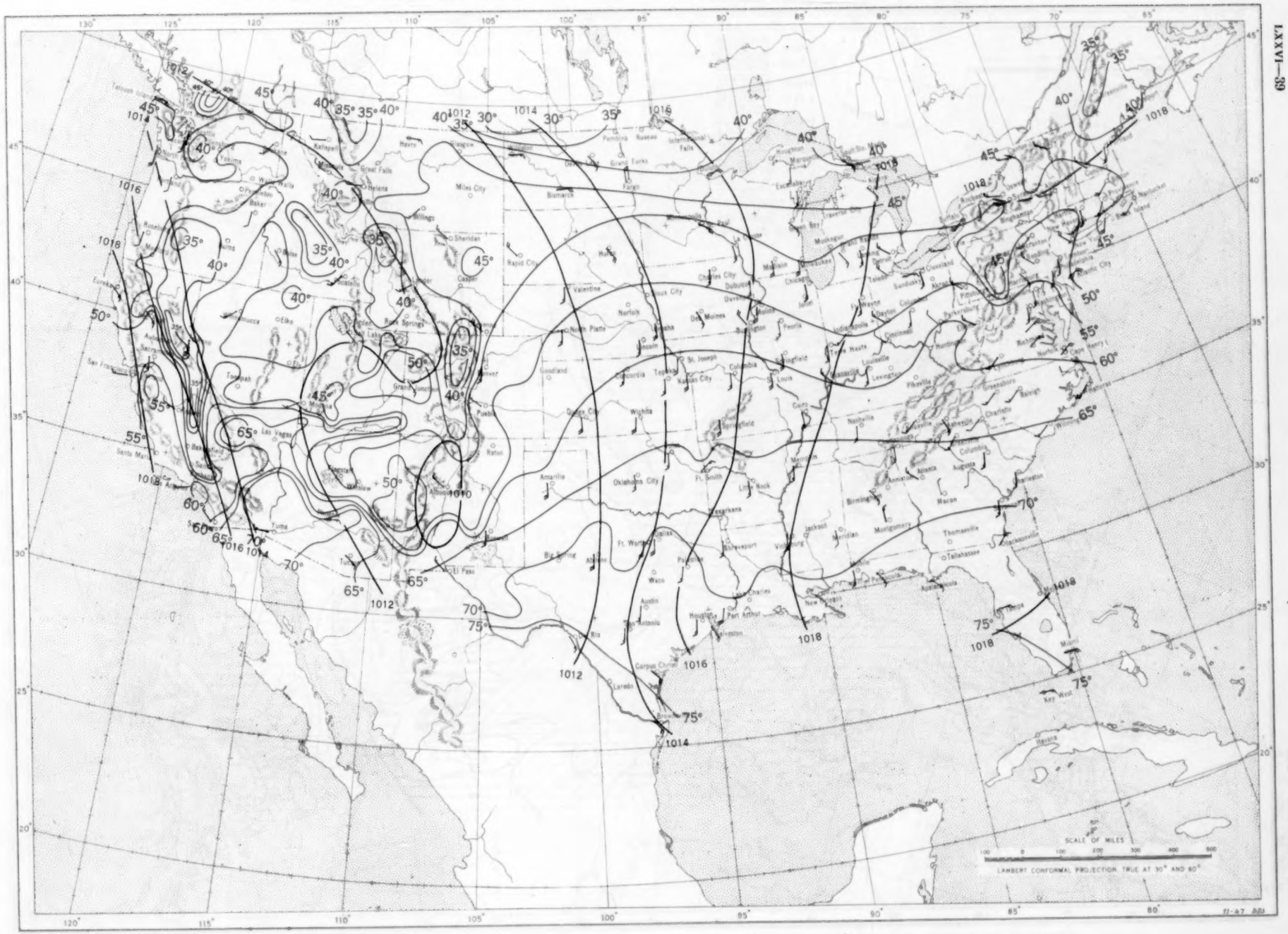
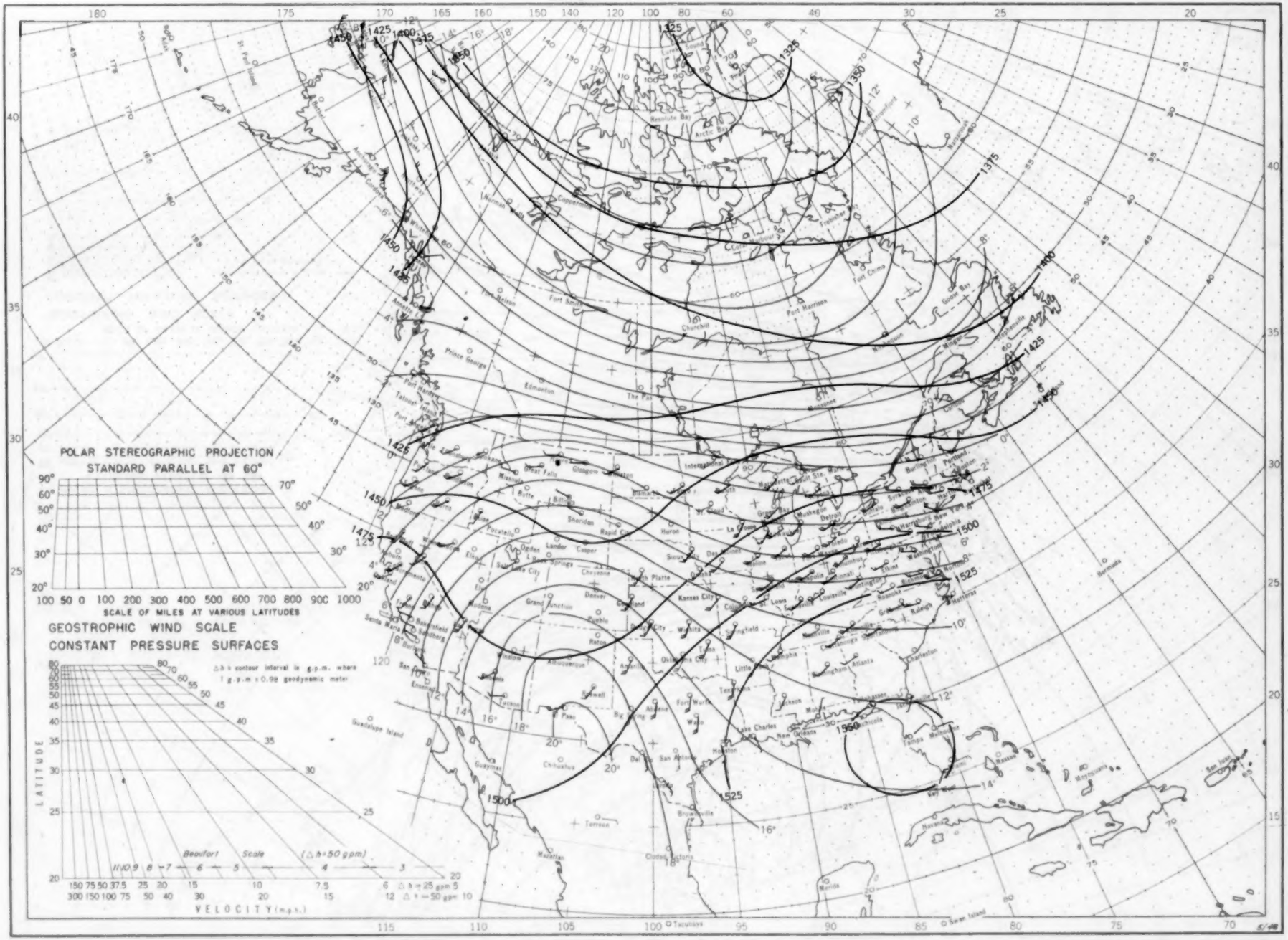


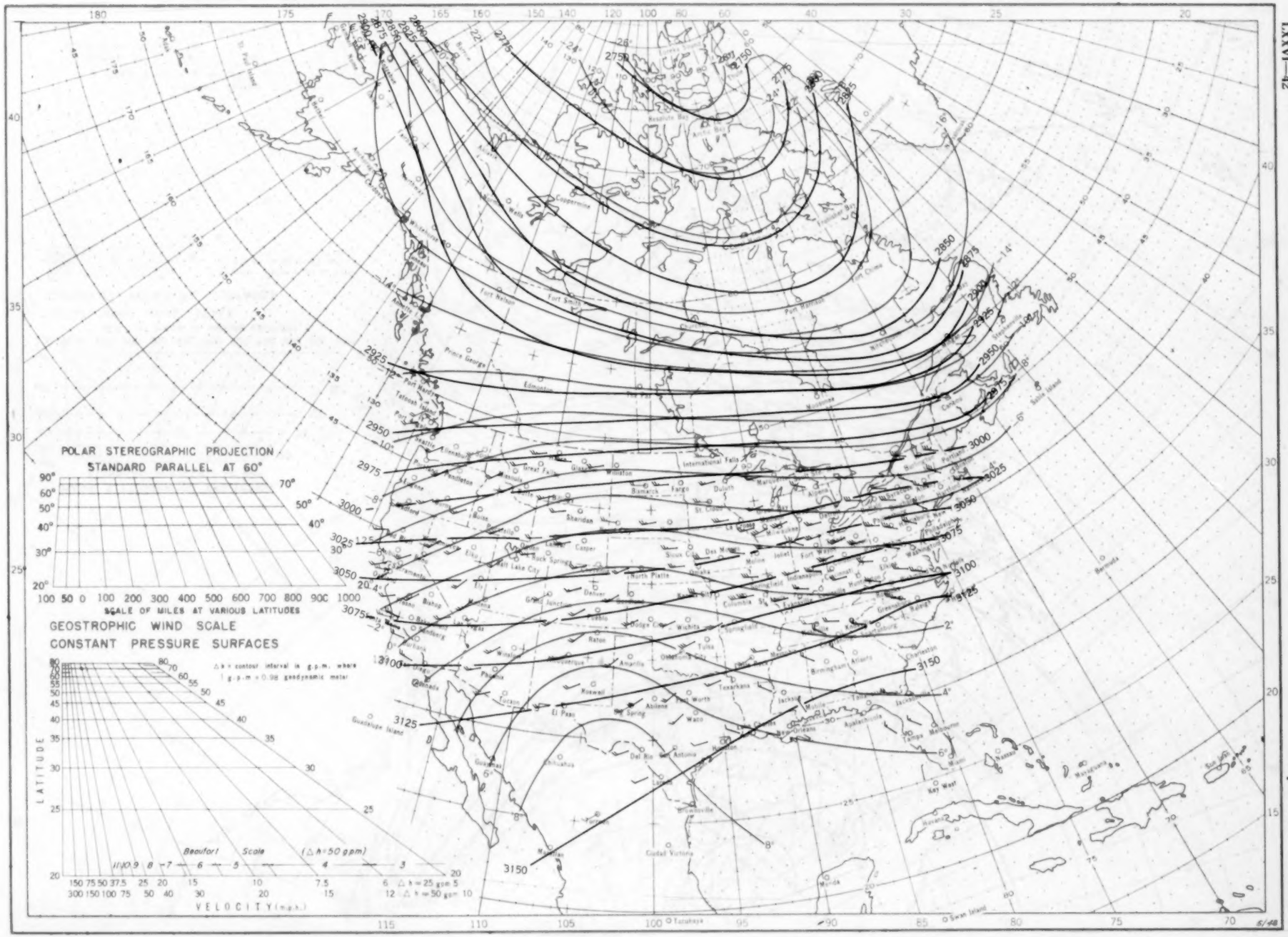
Chart VII. Total Snowfall, Inches, April 1948.

Chart VIII, April 1948. Contour Lines of Dynamic Height (Geopotential) in Units of 0.98 Dynamic Meters and Isotherms in Degrees Centigrade for the 850-millibar Pressure Surface, and Resultant Winds at 1,500 Meters (m. s. l.)



Contour lines and isotherms based on radiosonde observations at 0300 G. C. T. Winds indicated by black arrows based on pilot balloon observations at 2200 G. C. T.; those indicated by red arrows based on rawins taken at 0300 G. C. T.

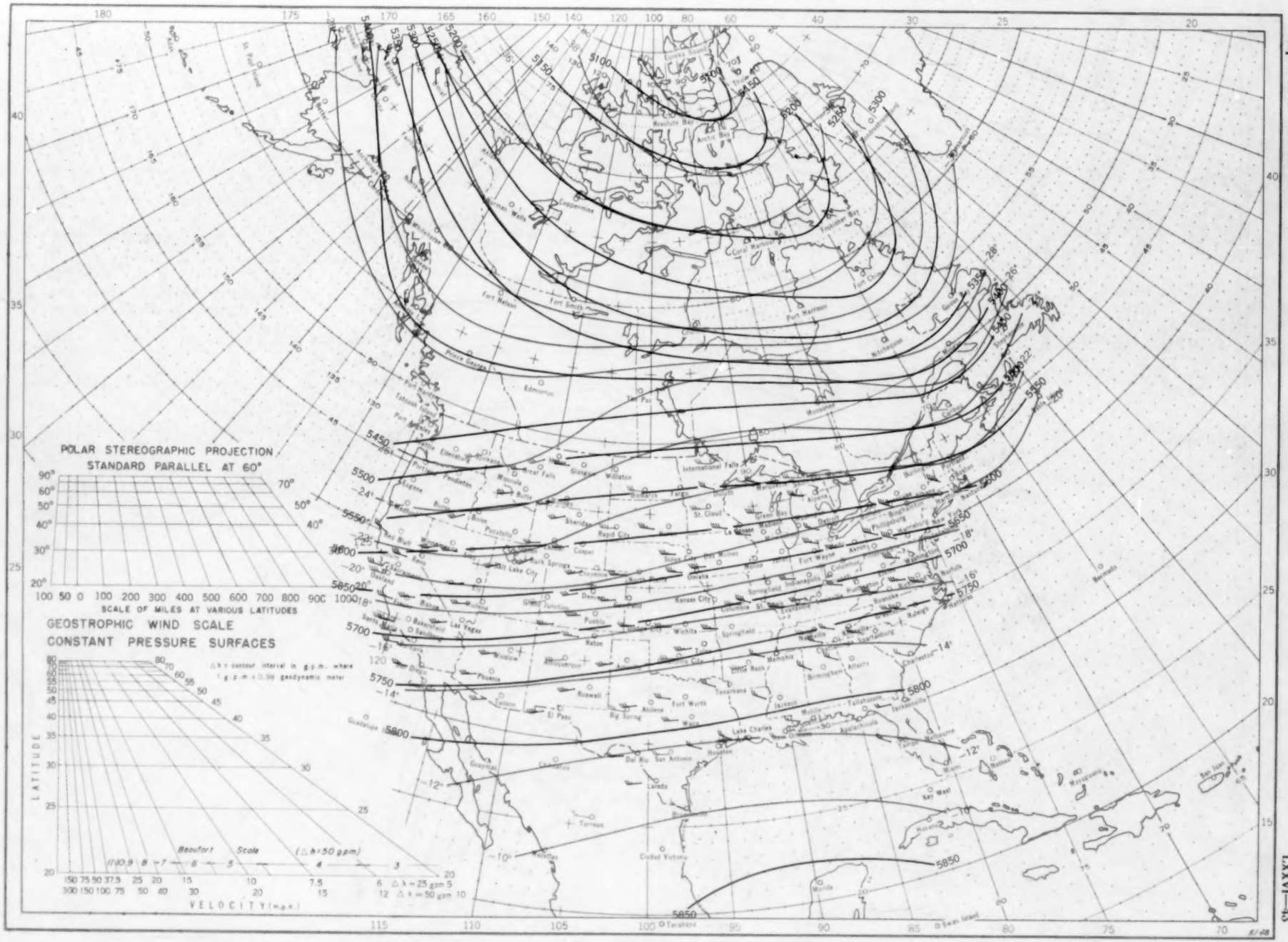
Chart IX, April 1948. Contour Lines of Dynamic Height (Geopotential) in Units of 0.98 Dynamic Meters and Isotherms in Degrees Centigrade for the 700-millibar Pressure Surface, and Resultant Winds at 3,000 Meters (m. s. l.)



Contour lines and isotherms based on radiosonde observations at 0300 G. C. T. Winds indicated by black arrows based on pilot balloon observations at 2200 G. C. T.; those indicated by red arrows based on rawins taken at 0300 G. C. T.

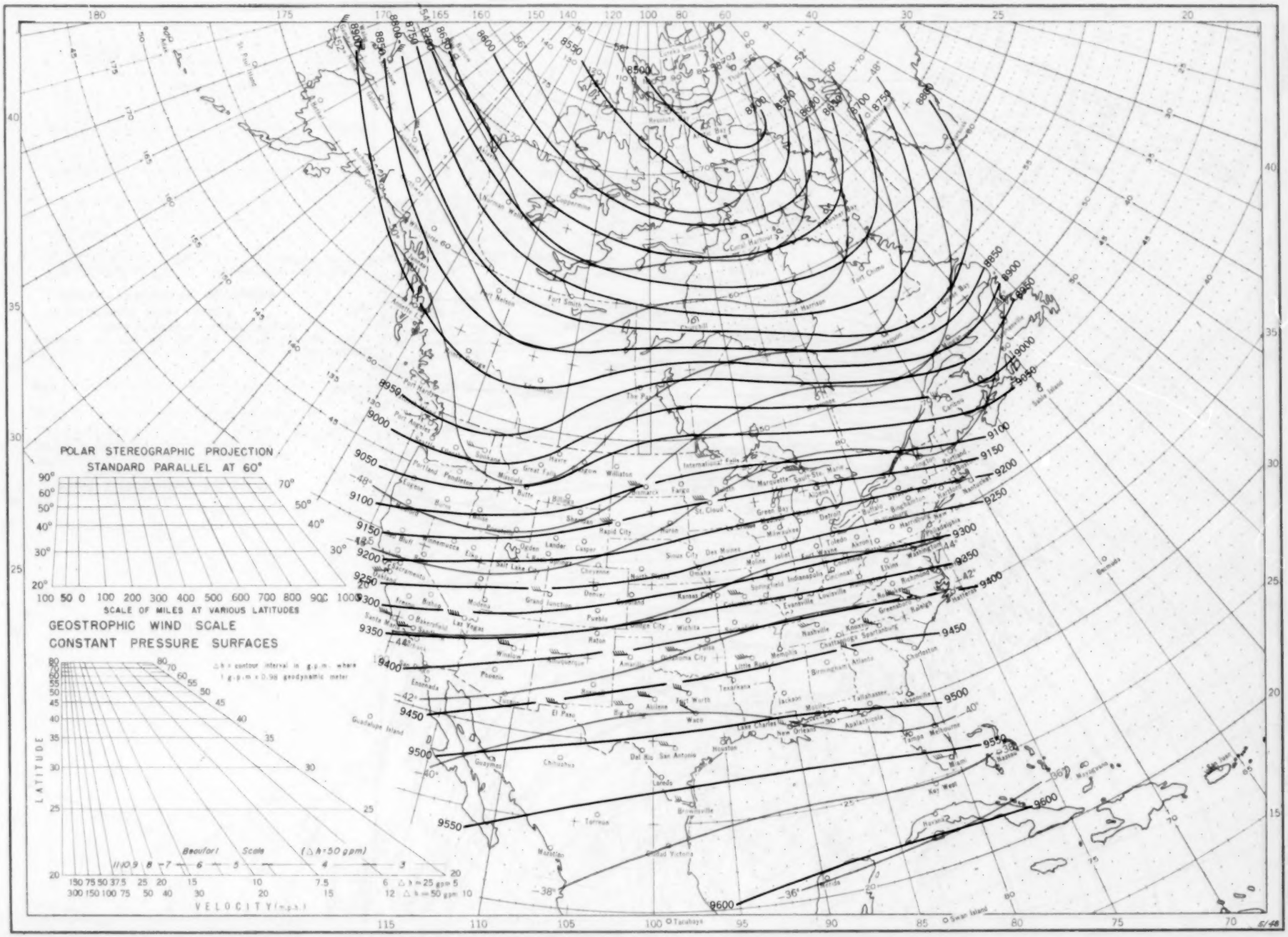
Contour lines and isotherms based on radiosonde observations at 0300 G. C. T. Winds indicated by black arrows based on pilot balloon observations at 2200 G. C. T.; those indicated by red arrows based on rawins taken at 0300 G. C. T.

Chart X, April 1948. Contour Lines of Dynamic Height (Geopotential) in Units of 0.98 Dynamic Meters and Isotherms in Degrees Centigrade for the 500-millibar Pressure Surface, and Resultant Winds at 5,000 Meters (m. s. l.)



Contour lines and isotherms based on radiosonde observations at 0300 G. C. T. Winds indicated by black arrows based on pilot balloon observations at 2200 G. C. T.; those indicated by red arrows based on rawins taken at 0300 G. C. T.

Chart XI, April 1948. Contour Lines of Dynamic Height (Geopotential) in Units of 0.98 Dynamic Meters and Isotherms in Degrees Centigrade for the 300-millibar Pressure Surface, and Resultant Winds at 10,000 Meters (m. s. l.)



Contour lines and isotherms based on radiosonde observations at 0300 G. C. T. Winds indicated by black arrows based on pilot balloon observations at 2200 G. C. T.; those indicated by red arrows based on rawins taken at 0300 G. C. T.